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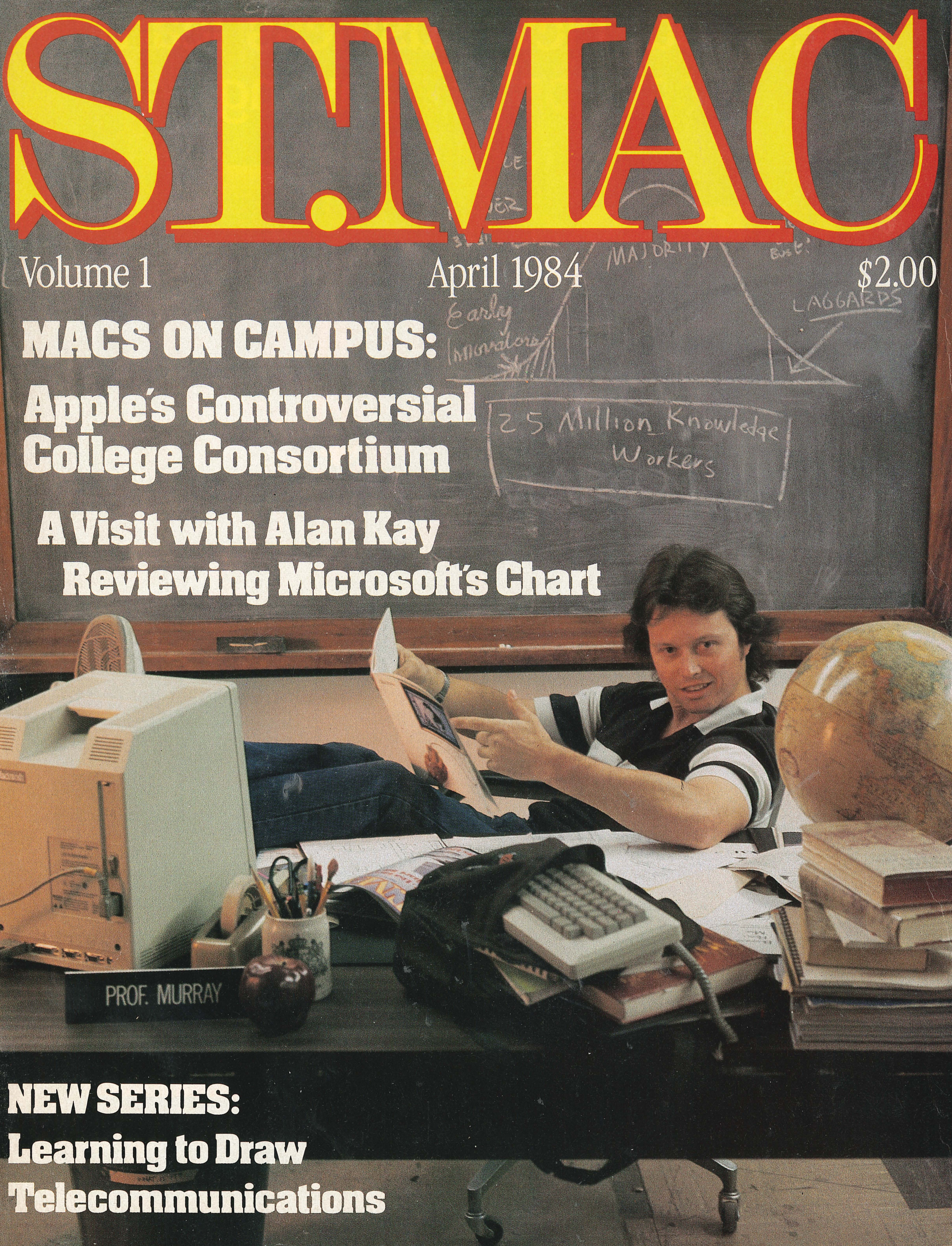

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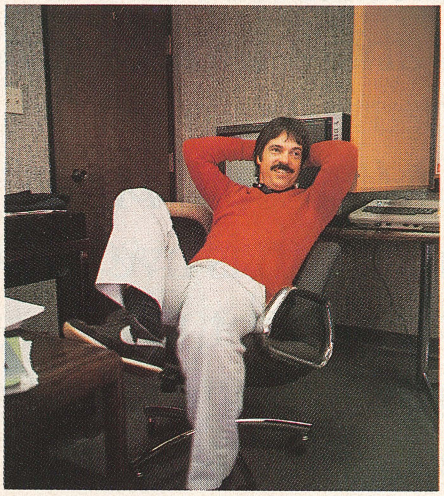

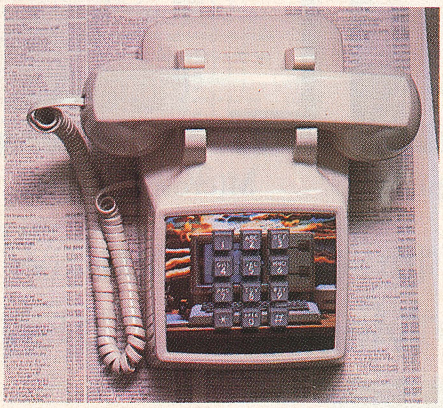

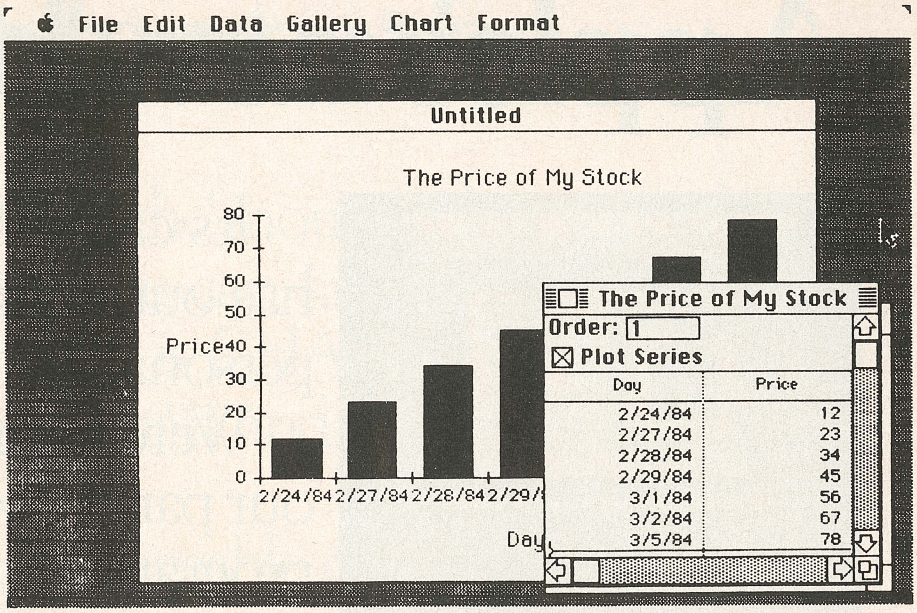

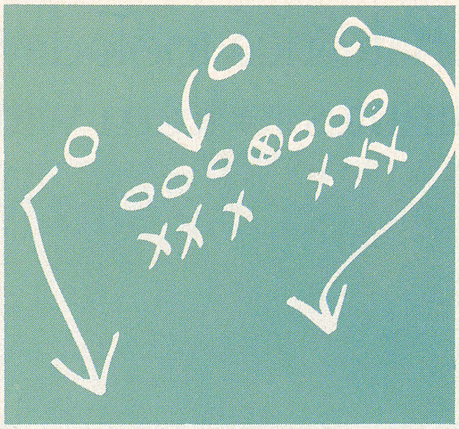

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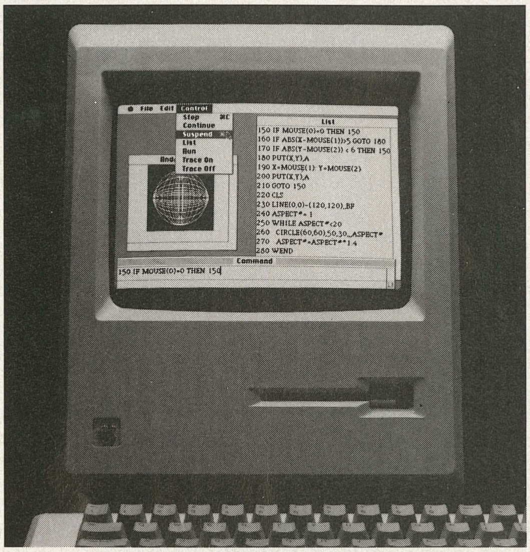
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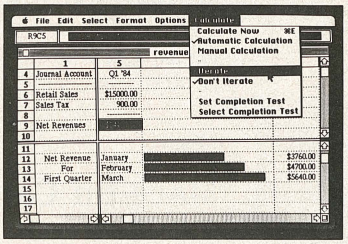
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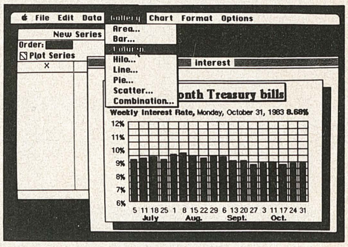
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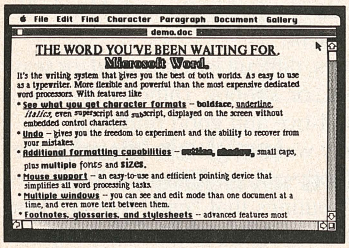

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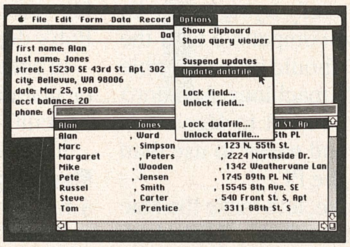

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VIEWPOINT

Making Mac PC-Compatible

Let's demolish the Macintosh criticisms once and for all.

One of the most ludicrous criticisms is this: Macintosh isn't PC-compatible. Isn't PC-compatible! Horrors!

Actually, there's a nugget of validity here, but the criticism is totally misguided. Most people don't care if their non-IBM computer reads IBM disks. What they do care about is software. Can they get the popular packages? Will the software be as powerful as the IBM versions?

Software availability is what the "PC compatibility" moaners are really trying to say. To say that Mac should be compatible with the PC is like saying the PC should be compatible with older, slower, CP/M machines. And don't forget that software converted to Macintosh will be faster, smarter, and easier to use than the same packages on the PC.

But, for argument's sake, let's make the Mac PC-compatible. Just for fun. First we junk Mac's fast eight-megahertz, thirty-two-bit processor for the PC's slow four-megahertz, sixteen-bit processor. Next, we make Mac twice as large. We lower the screen resolution. We replace the small, fast Sony drives with large, slow IBM/Tandon drives. We throw out 64K of ROM memory containing the most incredible software ever written for microcomputers. We ditch the mouse and replace Mac's superb keyboard with a monstrous affair plugged with keys that nobody understands (and whose functions change with every new program!). We put some of the keys in the wrong place. We add a noisy fan. We add DIP switches on the main board to thoroughly confuse both owners and technicians.

Wait! We forgot to unbundle Mac! Let's make the keyboard, mouse, serial ports, four-voice sound generator, user interface (Mac's marvelous operating system), the disk drive, the training disk (and audiocassette tape), and, of course, the documentation all separate items—each with a separate price. That way Mac will be *just like the PC*: What you think costs $2,400 *really* costs $4,779.55.

Had enough? Is Macintosh compatible enough now?

Here's another criticism. It's the idea that Mac's icon-oriented operating system is somewhat inferior, or less flexible, than cursor-based, command string operating systems like Apple DOS, CP/M, or Microsoft's MS-DOS.

Does a blinking cursor on an empty screen somehow offer direct access to "the machine"? Because you type cryptic commands, rather than click and drag, can you do more?

Of course not! All operating systems have a limited set of functions. Period. Command-oriented systems make you remember the commands and force you to phrase and spell the commands absolutely correctly. To imply that empty screens offer unlimited vistas is a romantic notion that displays an ignorance of how computers operate.

Mac's Finder also has a finite, though much larger, set of functions. But Mac's functions are vastly easier to use, and more powerful, than functions of traditional operating systems.

How about naming files? Other operating systems allow you complete freedom, as long as the name fits into eight characters and a three-character extension (and no special symbols or spaces are allowed). Often, the extension is taken by something like COM, or EXE, or BAS. Here's a typical filename for one of these operating systems: ACCNTREC.DTA.

Mac's Finder also has limitations on filenames: They can't be longer than 255 characters. Here's a typical name for a Macintosh file: "Accounts receivable through March 15, Bob's department."

In computers, difficult isn't powerful, or sexy, or glamorous, or snobby. Difficult is simply difficult. Good-bye and good riddance.

If you really want to get into the machine, Mac will happily oblige. Microsoft Basic has a full set of routines that "call" internal Mac software for amazing feats with little programming. MacBasic, out soon, is even better: It lets you run multiple programs simultaneously, allows you to open windows that show "what's going on inside the machine," and more.

Then there's MacPascal, a C compiler, Logo, and, for those who truly want to "get into the machine," a topnotch 68000 assembler. All are just around the corner.

What's left? Limited memory? Remember, this is a "thirty-two-bit" computer; 128K goes a long way in Mac. Mac's RAM is comparable to the (never-stated) horsepower in a Rolls-Royce. As the Rolls folks say, "It will get you anywhere you wish to go, Sir, at extremely comfortable speeds."

And don't forget the 64K of ROM. Mac's programmers stuffed those ROMs with code that's extraordinarily compact. Think of it as 128K of ROM, or 192K of ROM. Either number would be more "true."

The revolution has arrived. The naysayers that remain are, mostly, people who haven't experienced Macintosh.

For the few obdurate souls that remain, we can only repeat Andre Gide: "The dogs bark, and the caravan moves on."—A.W.

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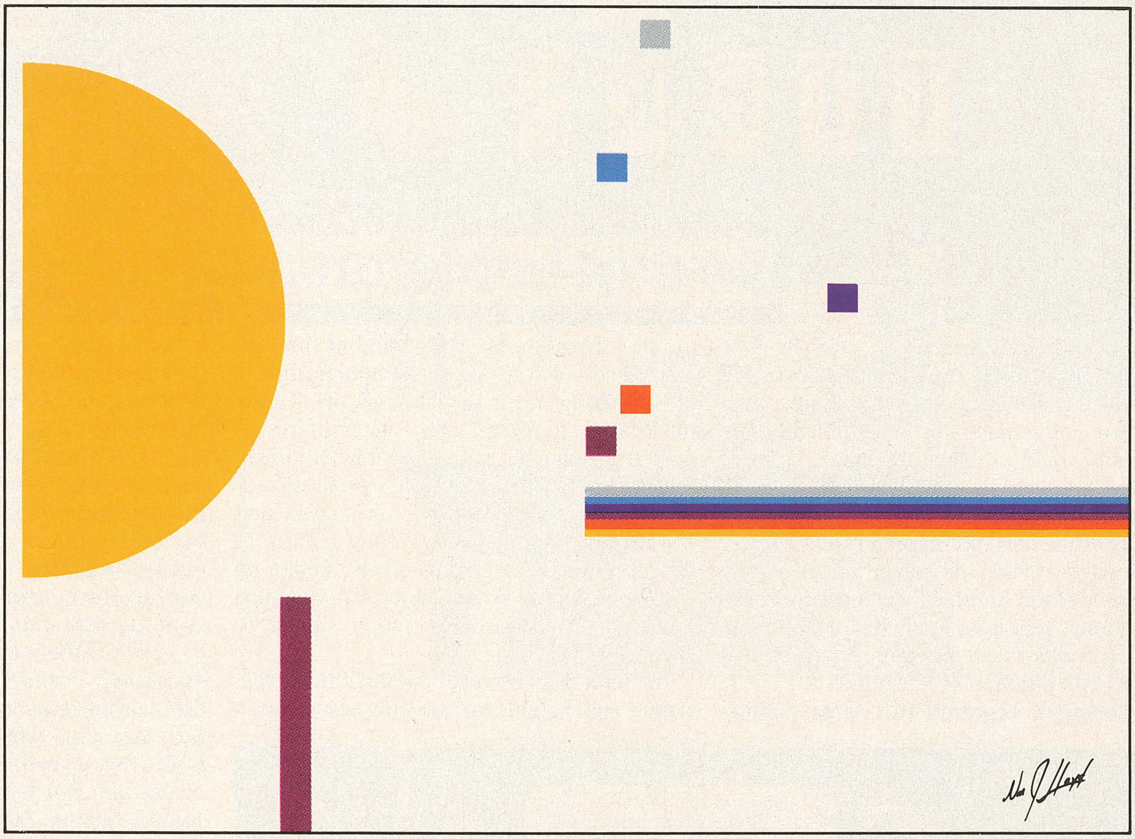

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Lost in Time and Space

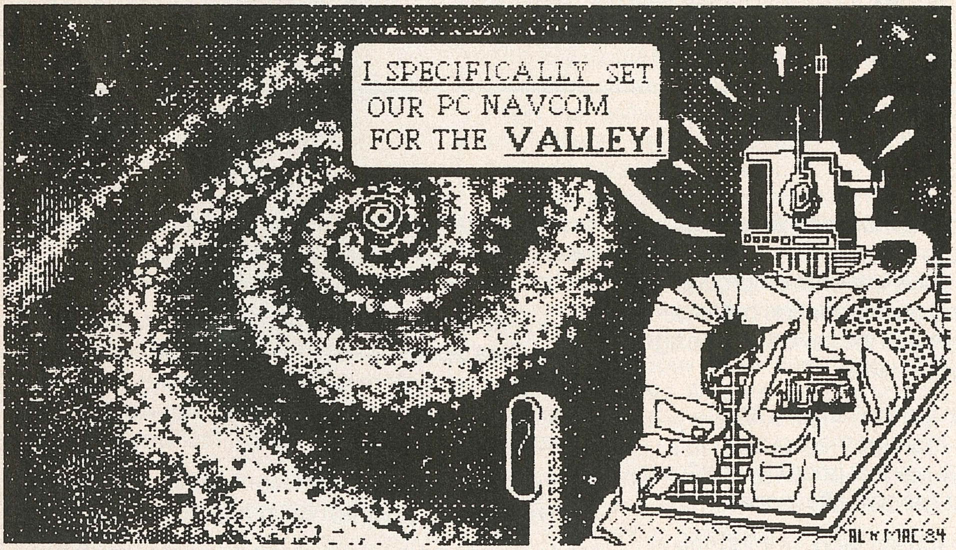
The few short hours I spent with a borrowed Mac during the night following Super Bowl XVII were dominated by one thought: The machine would vanish at the crack of dawn! Not that it was going to transform back to the sands at first light; the Mac was simply due back early the next morning at the office where it belonged. Having the loaner *was* nice. The pressures of the "Cinderella clause," however, contributed very little to creativity that night. But you couldn't have pried my hands off that mouse with a pound of Plastique!

Inspiration, however, was quite another story. Not only did I still have afterimages of my home team's winning antics on the gridiron the afternoon before, but the single showing of that now-infamous "1984" Apple commercial had left its mark as well. Director Ridley Scott's Macintosh TV spot was still running on the insides of my eyelids, stimulating my imagination. In fact, imagination was all I had going for me that night, because the Mac came with no documentation whatsoever.

This "doodle-cum-cartoon," produced by my overnight exercise with *MacPaint*, is the result of my very first contact with Mac. My only other experiences with computer graphics came from Datasoft's *Micro-Painter* electronic coloring book. It was one of the very first pieces of software that I bought for my old Apple II, and it set me back all of forty bucks about four years ago. The program supported my interests in pen-and-ink pointillism (a drawing technique in which small dots or marks are applied to make up shapes and shades on a surface) by offering control of the placement of individual pixels of color on a low-resolution screen. *Micro-Painter* also included a magnification mode similar to *MacPaint*'s Fat Bits goodie.

As limited as it was at the time, that experience still helped me find my way around *MacWrite* and *MacPaint*. But it was *MacPaint*'s spray-can feature that really grabbed my interest. Maybe it's my old neighborhood degree in New York City subway car and street art that attracts me to the spray-can technique, but, as you can see, the blended-texture possibilities are endless. Using the old dot-addressing method to create a spiral galaxy like this one would take light-years! This one was almost done by dawn.

Al Kirschenbaum
Kagel Canyon, CA



A Scientific Explanation

I have enjoyed reading the two articles written by Doug Clapp on Apple Computer's Macintosh and resident genius Bill Atkinson in the first issue of *ST.Mac*. However, I have some questions.

I have *Scientific American* going back to 1968; so when I came across Clapp's sentence that "Atkinson's work can be seen on the October 1978 cover of *Scientific American*", I got out the issue. True, there is a computer graphic portrait of a human brain on the cover, but it is in *low-resolution* graphics. Not only that, the article in the magazine is not on the claimed Atkinson 3-D computer-modeled structure of the brain but rather on brain function and blood flow, an entirely different topic. Is there a cover of Atkinson's work on another month's issue of *Scientific American*?

John S. Kundrat, M.D.
Lewiston, ID

While Atkinson's work does indeed appear on the cover of the October 1978 Scientific American, *Clapp did not mean to imply that the article it illustrated in the issue was about Atkinson's work; it was not.*

Mac Reaction

I enjoyed the first issue of *ST.Mac* and look forward to future issues. I thought you might be interested in some user reaction to the Mac. Despite all the hoopla, will users buy it? For me, the answer is no, at least until some problem areas are addressed, even though I am a dyed-in-the-wool Apple lover.

Everyone stresses the marvelous resolution of the Mac screen, but to me it is the fatal flaw in Macintosh. Screen resolution is apparently inadequate to support eighty-column-by-twenty-five-line video with readable text plus the desktop features. I suppose this ultimately traces to inadequate memory—not enough bytes allocated to the screen map.

I don't think the machine will find acceptance in the business community—or maybe not even at home—until it can display at least the "standard" eighty-by-twenty-five text format. For example, *Multiplan* on the Macintosh displays only fourteen rows, whereas one sees nineteen rows on a IIe. The *MacWrite* program cannot display eighty columns either and does

not even have horizontal scrolling, so there is no way, for example, to prepare a table that would print on a 132-column printer or even a letter with elite type and one-inch margins on normal paper (seventy-eight printable characters).

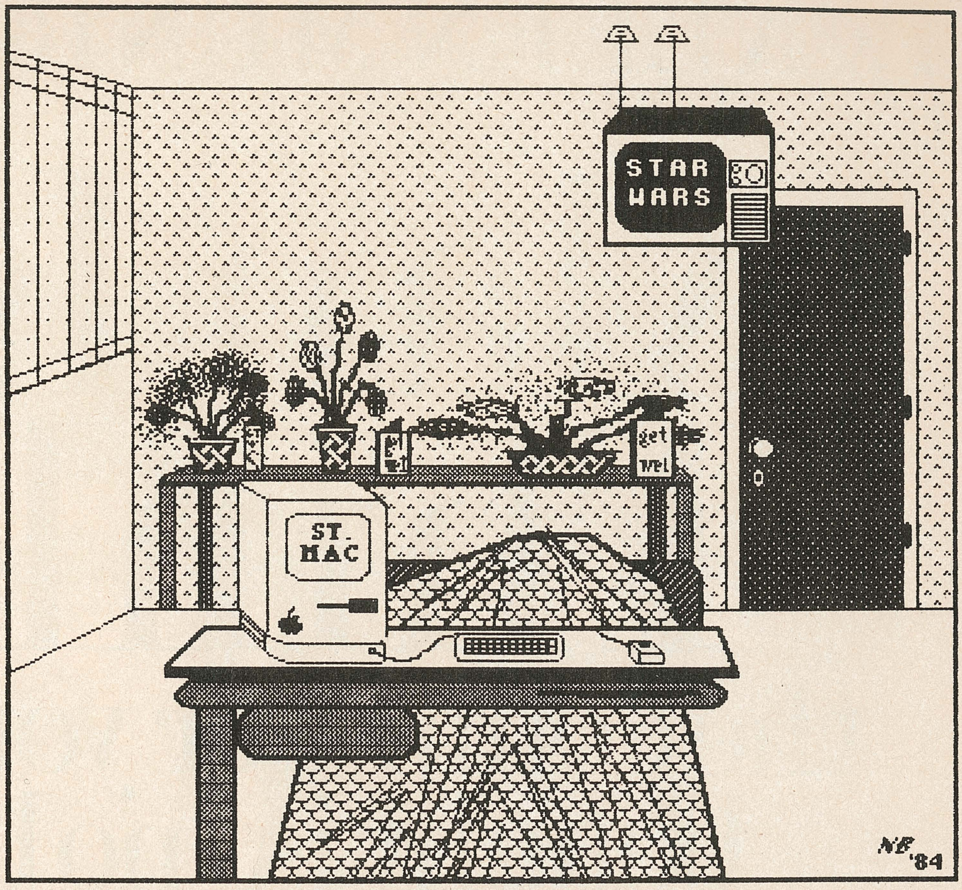
A second problem with Mac is that it is very slow (in spite of its "thirty-two-bit CPU") due to the long waits for disk swaps. The problem here is, I believe, the same 128K memory. With more RAM, applications could be written to have the entire program memory resident, with disk I/O required only for initial loading and for saving a data file. When a 512K machine is available, I suppose this can be changed either by rewriting the applications programs or by making the new memory appear as a RAM disk to the operating system.
Ronald K. Long
Columbus, OH

His Bedside Companion

I just received my first copy of *ST.Mac* and must say that you did a very good job considering the Macintosh wasn't even released until the end of January. I was, however, kind of disappointed with the overall "look" of the magazine. It's much too conservative. Don't confuse Macintosh users with those blue-suited IBM (ugh!) users. Loosen up a little, huh! Like with that great interview with the two crazies who programmed Mac's Finder—what would have been wrong with calling the story, "Finder's Keepers"? We new Mac users know that the machine can do really tough computing, but it's also a *fun* computer, too!

But that's not the real reason I'm writing to you. Recently I had an unfortunate incident that led to a week-long stay in a southern California hospital. I couldn't move around very well (did you know they use metal staples to hold together large incisions—*staples!*). My girlfriend brought my brand-spankin'-new Macintosh to the hospital a few days after surgery and I set the console and mouse up on the rolling food tray. I rested the keyboard in my lap and spent many happy hours getting further into Mac's "head." I demoed the unit for my surgeon and he left so impressed that he sent yet another doctor over from the professional building down the street for a second demo.

This time I had an audience of several nurses, a children's book writer/illustrator confined to her bed twenty hours a day, and my own semiprivate roomie. I probably sold four machines from my bed that morning. The children's book writer called Mac cute, both M.D.s asked if it could keep track of patient records, one of the nurses asked about educational programming for children, another one wanted to do patient charts, and a third asked if it could balance her checkbook (it was devoid of entries!). All asked where they could get more information. I recommended *ST.Mac*, but your next issue had better be a lot looser than the first one (a little humor can go a long way toward warming up an audience, you know).



Maybe you could get Doug Clapp to start a column for beginning writers—you could call it Clappwrite (no applause, please). Since Mac comes with a pretty good word processor (although I'm still looking for *WordStar*'s control keys for fast editing), it might be fun to have someone discuss the features of the program with examples of how to approach a story to be written for, say, *ST.Mac*. That way you could publish writer's guidelines (sneaky, huh?), do a how-to story that would benefit everyone, and maybe even get a few stories submitted—maybe even one from me!

I've included a little illustration of how I made use of the computer for Macrehabilitation. It absolutely took my mind off the pain and made my room and me the center of attention for days.

One more thing: How in the world did you decide on a title like *ST.Mac* for your magazine? It's a bit...umm...unusual, don't you think? I'd really like to know.
Neil Britt
Van Nuys, CA

Naming a new magazine is no trivial endeavor. Ideally, the name should be memorable, informative, proprietary, and fun.

We learned the difficulty of satisfying those four requirements two years ago, when we decided to follow Softalk, *our Apple II–specific magazine, with another dedicated to the IBM Personal Computer. We tested any number of names, including some subsequently adopted by other companies, and were met with massive indifference. Then we asked, "What if we named the mag* Softalk?" *Everybody loved it. They thought it was the best name since Double Bubble.*

Little did we realize what we had done to ourselves. Even though the IBM magazine carried the legend "for the IBM Personal Computer," subscribers and advertisers alike ignored the distinction when calling in. Some members of our circulation department were nearly reduced to quivering masses of unintelligibility while trying to determine to which Softalk *a caller was referring.*

We resolved never to call another magazine Softalk. *In casting about for a name for this magazine, we struck upon the idea of adopting the file-naming conventions of Pascal and CP/M where the name of a file is often followed by an extension that describes what the file is.*

Applying that convention, you can read ST.Mac *as* Softalk, *extension Macintosh. Actually, you can pronounce it Softalk Mac, Ess Tee Mac, or Saint Mac and we'll know what you're talking about.*

The name seemed particularly appropriate for a magazine about a divine computer. We hope it'll be as memorable as the machine it covers. We think it's informative as to what a reader will find inside. It's proprietary in that it does refer back to its Softalk heritage. And we hope that it's fun without being cutesy. What do you think?

ST.Mac would like to hear your reactions to articles as well as your views about the world of personal computing. Send your opinions, queries, suggestions, and solutions to ST.Mac, Box 7041, North Hollywood, CA 91605.

By ALLEN MUNRO

Alan Kay Thinks the computer you just bought is "no big deal"

More than twelve years ago, in describing the research goal of a group he headed at the Xerox Palo Alto Research Center (PARC), Alan Kay coined the term "personal computer." Twelve years ago is practically before the dawn of recorded time for the microcomputer industry. The Apple II was not yet even a gleam in the eyes of Jobs and Wozniak, and there was no such thing as a commercially available microcomputer system.

Since October 1981, Kay has served as Atari's chief scientist. In a recent interview in his Sunnyvale, California, office, Kay discussed his views on a wide range of topics, from his concept of the computer as a personal "information appliance" to crucial philosophical differences that exist among programming languages to the responsibilities of parents to educate their children.

The personal computer Kay envisioned at Xerox PARC was nothing like the first crude machines marketed under that name. From the beginning, Kay's clearly stated goal was that the personal computer should be "mundanely usable"—as natural and unconstraining as pencil and paper. The litmus test of its usability was to be how it was employed by children.

Kay reasoned that businesspeople will learn to work with poorly designed systems that kids would never put up with. Businesspeople have to work with whatever is available; children, on the other hand, have absolute standards of utility. If a system doesn't meet those standards, they won't use it.

Kay called his revolutionary design for a personal computer the Dynabook. Years before any personal computers were actually produced, he envisioned one that would have the following features:

Portability. The machine would be truly portable. According to Kay, a portable computer is one "that you can carry along with something else. Like with two bags of groceries."

Pointing. An efficient, easy-to-use pointing device would be mandatory. The Xerox group experimented with many such devices, finally settling on the mouse.

Allen Munro is a member of the research faculty at the University of Southern California and is writing a book on Macintosh applications to be published by Scott, Foresman.

Graphics. A large, high-resolution display would permit mixtures of text and graphics on the screen and in printed output.

Naturalness. That is, objects on the screen would behave much as objects do in real life. People would be able to apply what they already know about the world to make sense of the world in their Dynabooks.

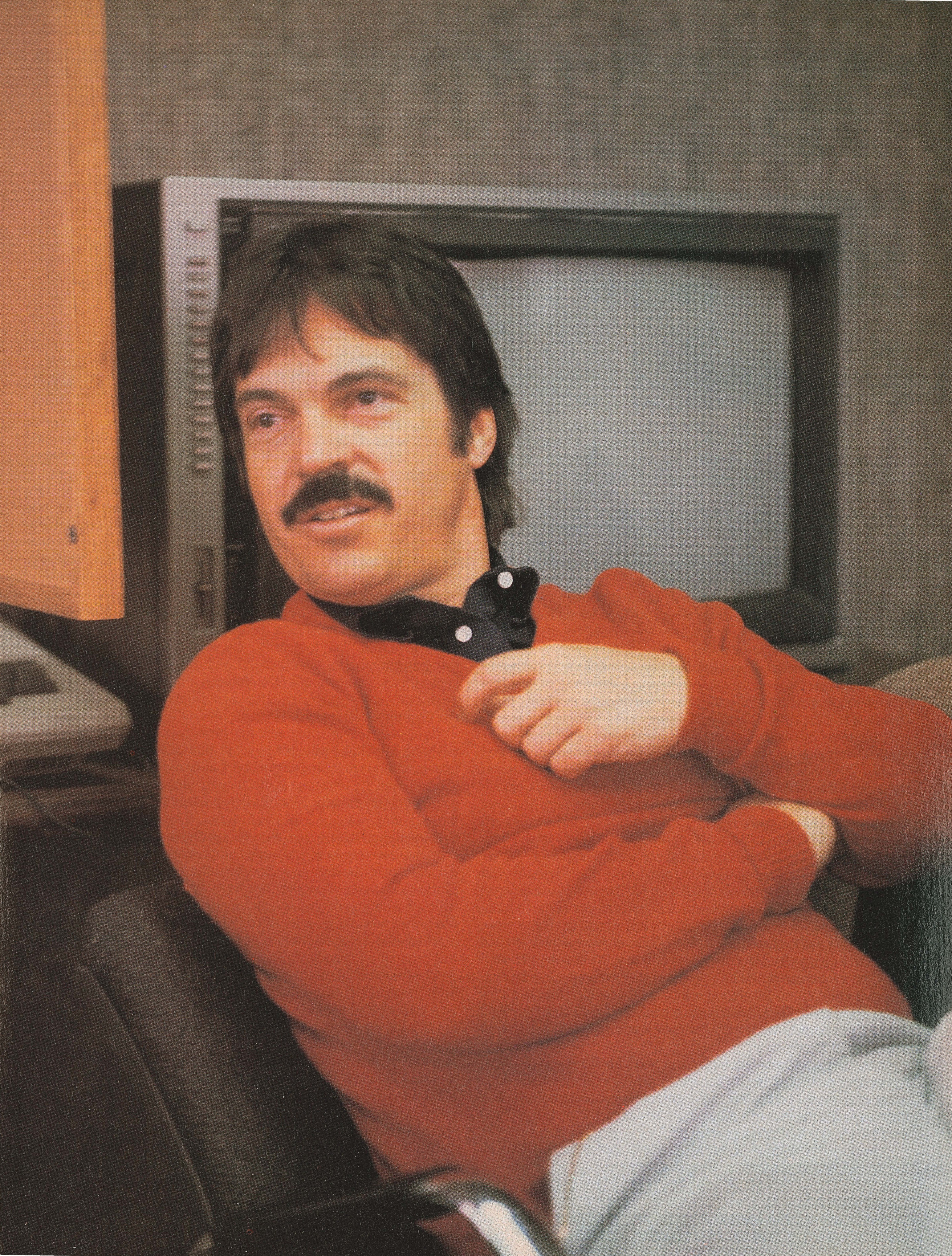
Power. The objectives of the Dynabook project could be achieved only through a computer with a great deal of computational power, coupled with intelligently designed software. "Kids need a lot more power," says Kay. "They're not going to be satisfied with the b.s. that people put up with in offices."

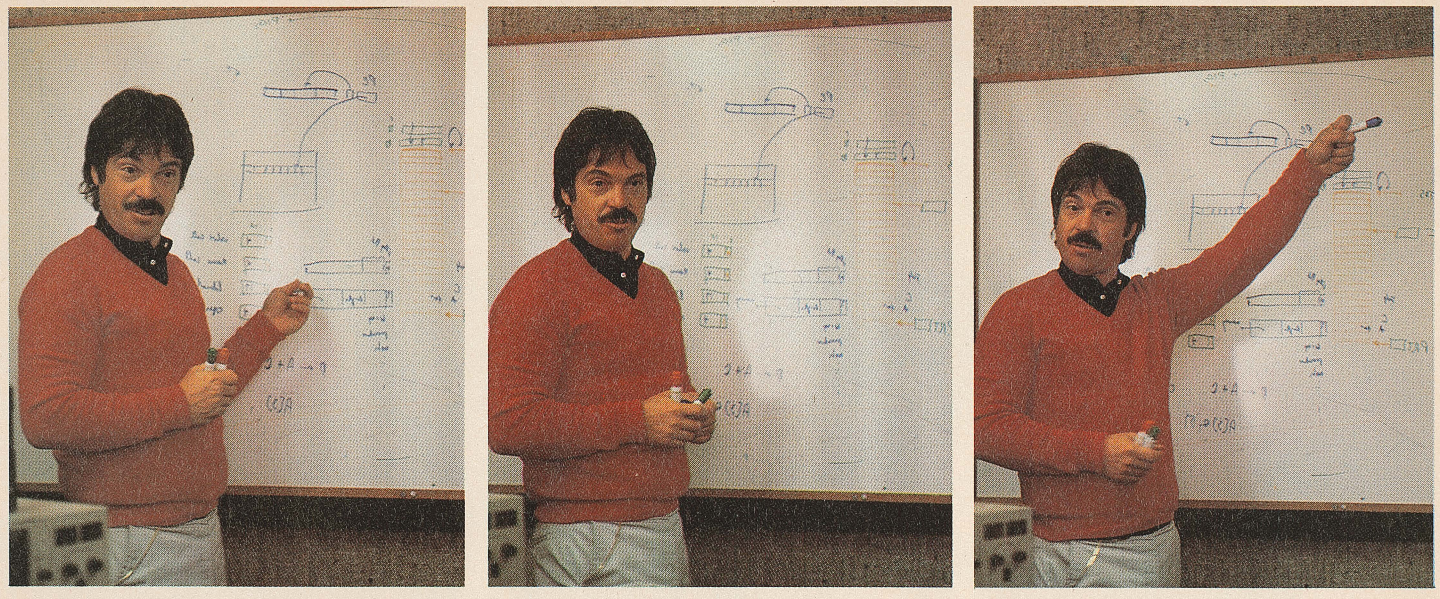
In an early article on the Dynabook titled "Programming Your Own Computer," published in the *Worldbook, Science Supplement, 1979*, Kay described a hypothetical young Dynabook user with her computer. In his example, the girl worked with her notebook-size computer while lounging in the grass under a tree. She edited a composition about space travel she was preparing as a homework assignment, changing text with a full-screen editor. Then she finished an illustration for the project, using a graphics painting tool. She could instruct the computer to undo what she had done when she made mistakes.

Except for the portability of the Dynabook, this sounds a lot like a description of the Macintosh. There is good reason for the similarity. It was Bill Atkinson and Steve Jobs's exposure to the user-interface concepts being worked out by Kay's group at Xerox that led to Apple's development of the very similar Lisa user interface, which is also carried out in the Mac.

The Macintosh is still not a Dynabook. Kay points out that there is very little of a computer that you *want* to see. He believes that everything that isn't either display or input device should be made "vanishingly small." More important, Kay wants even greater power for personal computer users.

Kay's introduction to academic computer science came at a time when exciting things were happening in the field. In 1966, he entered graduate school at the University of Utah. A small cadre of researchers was developing graphics systems, languages, and communications tools like nothing that had ever been seen before. It was at this time





that Kay worked on the predecessor to the Dynabook, a "personal computer" called the Flex machine, intended for use by noncomputing professionals, such as dentists and lawyers. The Flex machine proved difficult to use and helped instill in Kay a no-compromise approach to user interfaces.

At Xerox PARC, Alan Kay got an opportunity to pursue this objective without the pressure of having to develop commercial products immediately. He and his colleagues tore into the basic research and practical problems of developing a user interface to support the mundane usability of the Dynabook. A prototype machine, more nearly the size of a desk than the size of a book, called the Alto, was designed and produced. More than two thousand Altos were built by Xerox and widely used and tested in research environments, but the machine was never commercially marketed.

The Dynabook team sought to take truly innovative approaches to computing issues. Kay believes that having a new way of seeing a problem may be the most effective way of moving to a solution. "Point of view is worth eighty IQ points," he says.

Basic user interface elements such as windows and mice—now familiar to Macintosh and Lisa owners—were developed and refined on the Alto at Xerox PARC. Of even greater interest to the academic computing community was the development of the Smalltalk object-oriented programming language, the language of the Alto. Together with his PARC colleagues, especially Adele Goldberg, Kay pursued these research interests. To test experimental products in the acid bath of children's usage, he conducted computer camps.

One of the great disappointments (and for Kay there are many) in the current personal computer revolution has been the loss of joy in children exposed to computers. In his experiments with children while he was at Xerox, Kay found that kids had a great deal of intrinsic motivation in working with computers. Children were simply excited about controlling something as interesting as a Dynabook prototype. Kay's observations of children in today's Atari computer camps suggest that children no longer enter into such activities in a free-play exploratory mode. They now approach computers with clearly defined goals. Their parents want them to learn Basic so they'll grow up to make lots of money.

In the Dynabook experiments, boys and girls were equally likely to become motivated to use the computer. Now, 95 percent of the usage of personal computers in the computer camps is by boys, and they approach the task in a much more structured, goal-directed way than kids in the Dynabook camps did.

Alan Kay has definite opinions on many topics associated with the human use of computers. Here is a sampling:

On the IBM PC:

People worry about whether a processor is eight-bit or sixteen-bit, how many K bytes, stuff like that, all of which is almost irrelevant. The Atari 800, for almost everything, runs faster than the IBM PC. It's a much more efficient machine. The processor on the IBM PC isn't really a sixteen-bit processor. It has an eight-bit bus, just like everything else.

The Atari has some additional chips in there that take all the graphics load off its processor, so the processor is spending almost all of its cycles working on the user's tasks, and that is not true on the IBM PC. There's more available cycles, and it just so happens that the 6502 we use is faster than the 8088. They both are eight-bit ports. The 8088 has to fetch considerably more. It has to do two data fetches, whether it wants to or not.

So you have this absurdity. It's like hi-fi in the 1960s. When people discovered hi-fi in the 1950s, Zenith and RCA came out with what they called hi-fi, "2G" tone arms. You were supposed to think it was two grams, and a lot of people did. But it wasn't. It wasn't hi-fi. You know, this is the emperor's new clothes.

On Computer Literacy:

If you want to learn programming, the only possible reason is there might be something valuable to get in at least two directions. One is understanding what programmers do, and maybe wanting to be one yourself. And the other one is that it might help your mind to do some exercise along that direction. Basic's not very good for either one of those.

Something that's much more like what programmers do that's accessible to everyone is to write and produce your own little plays. Because there you have to worry about the larger rhetorical structure of the thing—why it works. You have multiple entities interacting, which is what you're always worried about in real programming. And you have a group of people with different talents and abilities melded together into a social force to get the system done. That's the way real programming is done. That's the *content*.

The *form* is, "I'll go out and buy myself a Commodore with a Basic on it. It's much cheaper than buying the *Encyclopaedia Britannica*, which I'll never open. I can prove to myself and everybody else that I'm helping my kid become computer-literate."

It's absolute bullshit. Literacy is *fluency*. Nobody who can recognize a word in a book—that is a word; this is a book—is considered literate. Literacy is being able to spend more than 90 percent of your effort on the content of something that's in a medium. And that is not what we're talking about [when we speak of computer literacy], because you can spend six months learning Basic and still not approach anything like the content of what a programmer does.

I used to say in talks, "Thank God the schools don't have any money. They haven't been able to ruin something that's potentially very neat [learning about computers]."

It's mainly parental pressure [that's resulting in schools getting involved with computers]. Parents, as usual, aren't taking any respon-

sibility to understand anything important about children. But they have these guilt feelings, so they try to go out and do the form, rather than the content.

On Books about Computers:

I can't bear to go into the computer section of a bookstore or the magazine section anymore. It's like trying to find a good detective novel or a good gothic romance novel. There's so much crap! So little imagination.

On Silicon Valley Entrepreneurs:

I'd just as soon send all the engineers around here in Silicon Valley to the Outback of Australia until they have read something like *The Federalist Papers* or Adam Smith's *Wealth of Nations* or *something*, for God's sake....

I saw a kid on television who had been caught throwing rocks through school windows, and he was asked why he did this. And he said, "Because I can."

Vandalism is kind of an act of creativity. Creativity is not done in order to get Nobel Prizes or in order to make you feel good. Creativity is saying, "I am here!" Vandalism is exactly that, and that's what's happening here in Silicon Valley. You ask them why they're doing it, and they say, "Because I can."

So what they're doing is actually vandalizing an entire generation of kids by acting as though things like Basic have value. Now you tell me, do we really need Basic right now, or could we get along without it for five years, until something of actual value comes along?

On Personal Computers:

Things haven't been the same in computer science since two things happened. The awful thing that happened was the Mansfield amendment in 1969. The amendment was a congressional reaction to pressure from the population about the Vietnam war, mostly uninformed pressure.

What it did was force all military funding to be put under the scrutiny of Congress and to be diverted only to military-type things. All of a sudden, everything was different at ARPA [the Advanced Research Projects Agency].

ARPA became DARPA (the Defense Advanced Research Projects Agency) at that point?

ARPA became DARPA. The last good thing to be done had already been funded, which was the Arpanet [a network of communicating computers around the world that allows scientists to send messages to each other]. That was finished in 1970. That was the end of ARPA funders [program directors] being drawn from the ARPA community.

During the golden age at ARPA, the funding was much less than it is now, but it was wide open.

More creative work was done?

Yeah. Their whole theory—partially because the managers at ARPA were scientists themselves—was "we fund people, not projects. If we can understand what these guys are doing, we should probably be off doing it ourselves. We'll just dump half this money for three years and take our lumps."

They took percentages, like you have to in real research. And, God, did they get some great stuff!

That was one bad thing. What was the second?

The second bad thing was the way the microcomputer industry got started and the standoffishness of the computer professionals. The whole problem with computers in the home is that they are toys.

But don't you think the professionals underestimated people's need for, or desire for, these things?

Yeah, we failed to make the connection between these things and citizen's band radios. There are more citizen's band radios in the country than there are personal computers. But most people don't use them.

Remember that there was a citizen's band radio boom in the early seventies? The reason is what we call a social token. People have a need, an articulate need to communicate, to be connected with people. It's part of the human psyche. Not one person in a hundred ever thought of the social implications of everybody having a citizen's band radio on only forty channels. It doesn't work. They're no good. They're eight-millimeter movie cameras. They're in that class of things people buy thinking they'll do them some good, but the actual overheads are hidden. When people find out what the overheads are, those things go to the back of the closet.

This is certainly happening with home computers. It may not be quite so much the case with top-end home-type machines that can be used professionally.

Let me make a perhaps needlessly provocative statement and say that personal computers are the *Laverne and Shirley* of computing. Because the only way you can get people to sit in front of an IBM PC or an Apple and do word processing is by severely limiting their ability to read information on the screen. You have to give them what's called "mind gum" in television.

You know, in order to get someone to enjoy *Laverne and Shirley*, you have to vastly lower their aspirations for what entertainment is all about. That's one of the things that the television industry has been engaged in, whether wittingly or unwittingly.

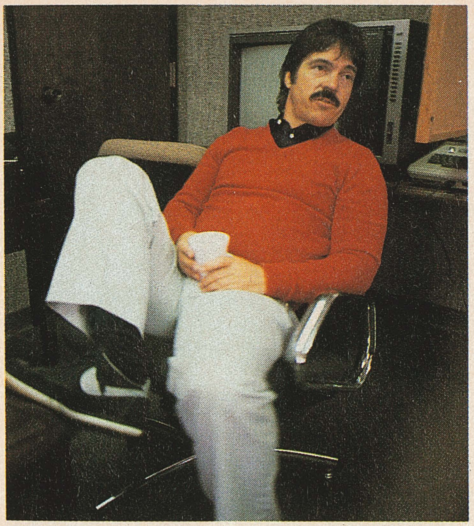
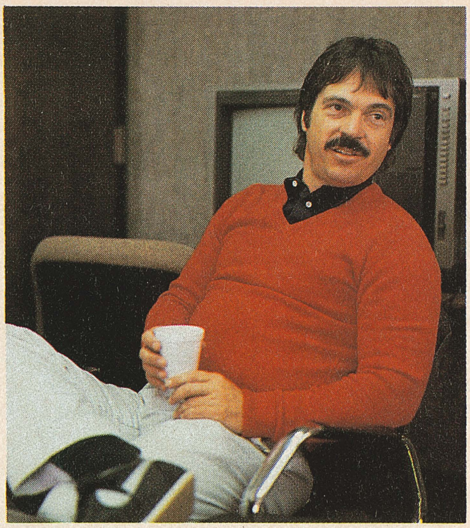
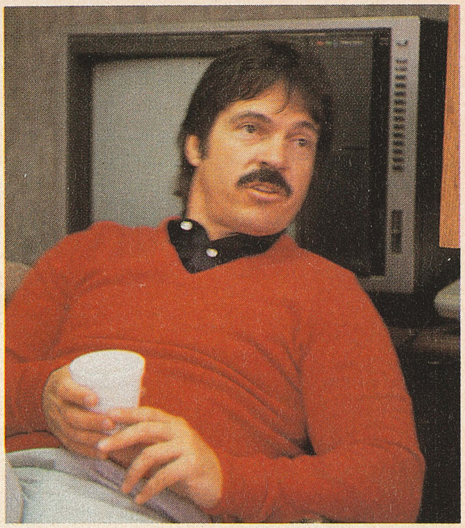
It seems that you're comparing what's delivered in personal computers with what you know could be delivered. But another way to look at it is to compare what's delivered, say, in the word processing area, with typewriters. Most people who've used both typewriters and word processing programs prefer the word processors.

Sure, word processing is undeniably a better thing, up to a certain point. And *VisiCalc* is the only good thing that came directly out of the micro industry that is undeniably good. But what I'm saying is that the aspiration level of people has been drastically lowered. For me, it's like somebody selling you on the idea that books are really good, but only giving you books written on blotter paper. Or on something like vellum. That is, they give you something in which you cannot become expert. Or the expertise does not make you efficient.

Or certainly not as efficient as you could be. But probably a book on vellum is better than no book at all, right?

Well, it depends on what culture you want to be a part of. Is a painting by a chimpanzee on your wall better than no art at all? Some

"Let me make a perhaps needlessly provocative statement and say that personal computers are the *Laverne and Shirley* of computing."

people might prefer it. In fact, if you go to motels....

Humans have always struggled with the difference between form and content. Form is always easier to do than content. You can gradually condition people to accept a *motel* as architecture. Twentieth century architecture is a disaster, with few exceptions. But people accept it.

Are things hopeless in the personal computer world? Because the mold has been created?

No. The Japanese are going to save us.

You mean the Japanese government and industry research-and-development effort to leapfrog into a fifth-generation computer architecture?

No, not fifth-generation. When the Japanese finally come over with personal computers....

See, I object to applying the term "personal computers" to this crap that's around right now, because they aren't. A pencil is a personal computer. There are only a few things, even now, that you can take to the beach, or anyplace you might be. You can't take them on a plane or anything. None of the ideals of the Dynabook are in place yet.

The Dynabook itself will definitely be a Japanese import. They're building all the displays, even those in the American versions of [battery-powered computers]. And I believe that one of the reasons they're not here yet is because [the Japanese] know that real value can't be delivered through existing systems.

We know from the work we did at PARC exactly how many computer cycles and how much storage and all that stuff you would actually have to have to make a personal computer.

A 68000 (the central processing unit used in the Macintosh and Lisa) won't do it?

A 68000 won't do it. It's closer. A better way of saying it is a four-megahertz 68000 won't do it [four million machine cycles per second]. Every time you speed things up by a factor of ten, you get to a new level of Nirvana.

The Macintosh runs at around eight megahertz.

Better. Twelve is right at the threshold. Twelve, if you're willing to compile in machine code. That gives you a lively system. You take a really high-level language and compile into machine code on a twelve-megahertz-or-faster machine. Remember, a twelve-megahertz machine is still only executing a couple of million instructions per second. And that is still a factor of two-and-a-half slower than the very first machine we ever built at PARC.

The Alto?

Yeah. Six million instructions per second. That's the lowest level you can program it—at the microcode level, which is the one that counts. That's where you put the system.

So it sounds like the Macintosh isn't in the league....

The vision of the user of the Dynabook was always somebody like a child or someone in a home. The same kinds of people who use paper routinely. The basic idea of this machine was that it should be mundanely usable.

You feel that's not the case for Macintosh?

Macintosh is an implementation of the designs of 1971. Big deal! We used to say at PARC all the time that relative judgments have no place in art.

But doesn't implementation always follow discovery?

Why? What did we implement the first time out at PARC? Did we do an incremental improvement to minicomputers?

Right. But the Alto cost $19,000 to make, and you hadn't added on any profit at that point.

Let me ask you a question. Would you rather have a cheap thing that is no good, or wait for a cheap thing that is good?

The problem is that people have found out that they can make money, partly because the public is so unsophisticated that people don't even understand that the IBM PC is really an eight-bit machine. It's basically an enormous con game. People are told that they need this stuff.

It's like television. Is there any reason to turn it on unless there's a good show there? I'm obviously in the minority, aren't I?

On Education:

I used to decry the lack of budget for music and art in schools, but I'm so glad they don't have it now.

They'd destroy the artist in the kids?

Absolutely. Thank God it's an extracurricular activity. And think what's happening [with computers in the schools].

Do you think that what's happening is destroying a lot of potential human use of computers?

Well, you know, there's always a question of what kind of guerilla

warfare students should be expected to do in school. One way of thinking of it is this: The best thing a parent can ever do for a child is give him a set of techniques for remaining himself for a twelve-year period.

You could also say that it's just tough if people aren't strong enough to hang onto their personalities from age five until age seventeen. Too bad for them. I think that a five-year-old kid is a fairly vulnerable little creature. And probably we should worry more about them instead of just consigning them to the fates.

I personally think that school is a kind of mass murder. Think of what kids are before they hit there, and what they seem to be when they turn out. Something has been done to their brains. It's a kind of symbolic lobotomy that's gone on, that has taught them a whole bunch of things but that has very little to do with what school is supposed to give.

I don't see any great subversive plot. I think that humans have always been doing this to each other, but I think it's a real shame.

I told my mother not too long ago—my mother's seventy-three now—I said, "Mom, in case you ever wondered, there's one thing I'll always remember you and Dad for—not getting too upset during all the scuffles and battles I had with school."

'Cause I hated school. I hated it. You can tell I hated it. And after looking back on it—at age forty-three—I was right. It is something hateful. Like everything else that's bureaucratic, it's very, very hard to find the bad guys.

The question is, what's the alternative? Is the alternative that parents have to take responsibility for their kids, especially before first grade? Almost certainly yes, if you believe anything that came from Suzuki [Shinichi Suzuki, the inventor of a music training method that has produced preschool concert violinists].

I have shifted in the last few years from an almost total diatribe against schools to realizing that, gee, it's really the parents' fault. These things are the way they are because the parents have not taken the responsibility, first, for preschool stuff, which is *critical*. Any parent who lets a kid get to the first grade without the kid being able to read should be shot.

Do you suppose, if the kid had an "information appliance" that he knew how to use when he first went to school, that it would be a tool for retaining some individuality?

Besides starting the research program here at Atari for lots of different things, the thing I've been thinking about most over the last couple of years has been preschool. What can you slide into the home....

To save kids before they get into school?

I'm not sure. See, [Jerome] Bruner made a good point when he got shafted from the MACOS thing. [MACOS—*Man, a Course of Study*—was a major social studies curriculum developed under federal funding.] He eventually got run out of town by the fundamentalists. And NSF [the National Science Foundation] got enjoined never to fund...

"Politically oriented" projects.

Disastrous! And he said, "I'll never again try to do a curriculum that's bulletproofed against the teacher."

What I realized from that whole thing is that *any* curriculum you do is for the teacher. Forget about the kid. Because what's really going on is an enormous power struggle. There's no way you're going to defeat the teacher with an end-run thing. The best you can do is get the teacher interested in the curriculum. Do the curriculum for the teacher. Otherwise they will kill you every time.

Another approach would be to end-run the school system entirely.

That's true, but in some sense it's almost too late—every time I think about what do you do, when do you do it, I go back to Suzuki.

Suzuki doesn't just do violin; he has a whole thing called the Talent and Education Institute, and they run a kindergarten—preschool stuff. When the kids that go to first grade [from the Suzuki program] are tested in the first grade, the average IQ is 162; and there's no screening for this kindergarten. Of course, IQ is only a relative measure, right? It doesn't have anything to do with intrinsic brain power or anything else, but these kids can really deal with a lot of things. Their brains are agile, they're really working, they're taking in, they're thinking about things in ways they never were before because they're exercised in that context during the most critical part of their lives.

My whole career actually comes down from one single fact. And that is that, by the peculiar way my parents read to me, I learned how to read very rapidly at age two-and-a-half. I'd already read four or five hundred books before I ever hit the first grade. I already had a world view. And it was not a single world view.

I knew that what the teachers were telling me was bullshit. You know, because I could say, "But what about this that I just read? Or what about...?" Of course, they just hated me.

It's this whole idea that kids are so stupid that they will get only one simple thing—that's untrue. Kids are incredibly smart. It's just that the only manipulable objects that are really worthwhile are their parents. If you give them other manipulable objects that are really worthwhile, they'll show a lot other than just social smarts. And the question is, how can you do it without getting the parents engaged? Or should you even? Interesting question. That's why I'm almost a Luddite, as you can tell. I basically hate technology for almost everything, except what it's really good for.

I would much rather do what Jesse Jackson wanted to do with Operation PUSH. He said there's only one way of getting black kids, or any kids, back on track, and that is to get three people involved: the parent, the kid, and the teacher. And there's no way anything is going to happen unless there's a community education effort in which all three are the loop from day one. That's all that Operation PUSH is about. Of course! He hit it right at the center. This is a social thing. This has nothing to do with transferring knowledge fluid from the teacher vessel to the student vessel.

Just like Suzuki has nothing to do with learning to play the violin. The whole Suzuki violin method is teaching the kids character through music. It's done by having the parents do all the things that the kids must want to do later. See, the way Suzuki starts out, the kid comes along with the parent and the parent takes violin lessons for a while. Meanwhile, all this music is going around. Eventually, the kid says, "Gee, I want to do that." The parent stays ahead of the kid for at least two years. It's done exactly as the kid learns how to speak the native language. It's done at that age. It's like neurolinguistic programming.

Some important neural pathways are being built at that time, and it probably makes a change in the kid for the rest of his life. Pretty sobering thought. Can you do that without the parents? Can the average parent ever understand that this is important? I don't know. That problem and the half life of plutonium seem to me the two most important problems to deal with today.

"What they're doing is vandalizing an entire generation of kids by acting as though things like Basic have value."

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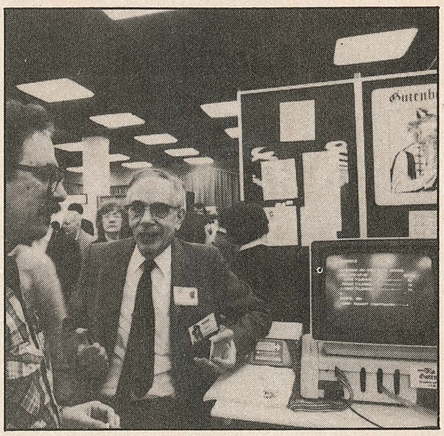

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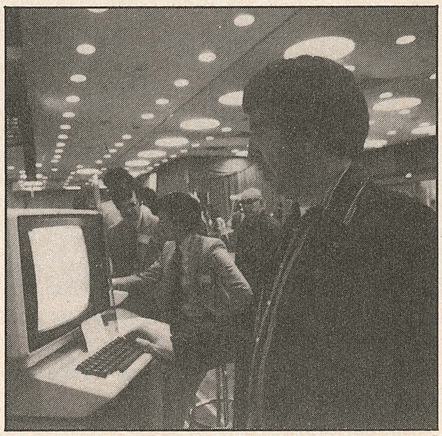

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TELECOMMU

By MATT YUEN

The computer changed your life. And the modem will change it again.

As children, most of us felt tempted to pry open the radio just to see what was in there, even though we knew there wasn't anything to adjust or fix. Out of the same kind of curiosity, Lisa users have probably looked over their machines and found two ports at the back labeled Serial Device A and Serial Device B. What the heck are those things for? And inquisitive Mac owners no doubt have also noticed that on the back of their machines there's a port with the picture of a telephone above it.

Those ports, innocent as they look, are the keys to opening up a huge world most of us know little about—communications. Not telephone or radio communications, but computer communications.

When you ask what the most powerful aspect of computers is, a lot of people will say that it's the software. After all, the computer can't do a whole lot without it. Software isn't just *LisaThis* and *MacThat* and the programs represented by icons; it's also the stuff inside the machine that puts those icons on the screen, moves them around, and displays what you type. Software is indeed a key to the computer's power. But in a different way, the ability to communicate via software is vastly more powerful than any software written.

Before...and After

Spreadsheets, word processors, accounting programs, and graphics packages are great. They let us do things faster and more efficiently than we could without them, but they're unidimensional in how they aid us. That is, they provide basically a single advantage—speed. Before *Multiplan*, there were pencils, green sheets, and adding machines; before *LisaDraw*, there were pens, brushes, and art departments; before *LisaWrite*, *MacWrite*, *WordStar*, and *Apple Writer*, there were typewriters. Software lets us work faster and easier, but it doesn't ordinarily empower us to do something we had no way of doing before.

Computer communications lets us move information between places faster than express courier services, and it also gives us access to information that was generally difficult or impossible to get before. In that respect, communications is bidimensional; it lets us perform some familiar tasks faster, and it lets us perform some new ones. Computer communications, also called telecommunications, makes possible myriad things that weren't possible without computers. The first time most of us used computers, we were amazed at what they could do; and it's the same way with telecommunications. It's staggering to find out the number of services available to anyone with a computer (and sometimes with enough money).

In this section of *ST.Mac* each month, we're going to explore the area of telecommunications—the features of available services, how to take best advantage of them, new ones that pop up, and general issues that affect not only how we communicate by computer, but also how telecommunications influences our lives. We won't be getting too deeply into technical material; instead, the focus will be on how to use the tools of telecommunications. Concepts will be universal. In other words, it usually won't matter if you have a Lisa or a Macintosh (or an Apple II or III, an IBM, DEC Rainbow, or Timex Sinclair). The material we'll be covering will generally be applicable to all computers. The exception will be communications software, in which case what machine it's for will be clearly stated. Don't worry, equal time between Lisa and Mac applies here.

But before we get rolling too fast, the first thing we ought to do is whiz through a short primer on telecommunications.

I Vant To Be Alone

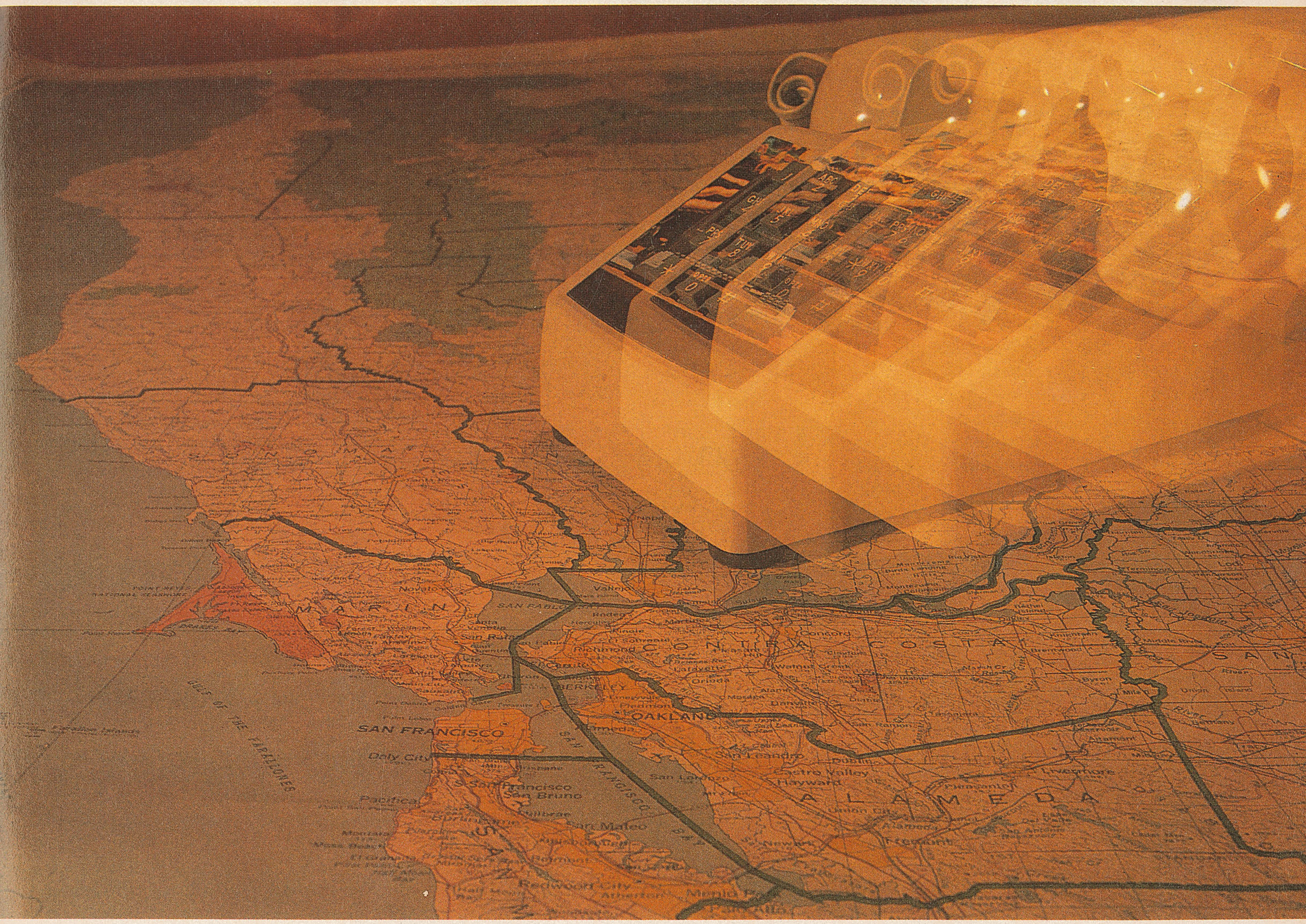
Sitting in front of the computer with mouse in hand, it's not hard to imagine computers being used in isolation, disconnected from the world outside the room you're in. With number crunching, data filing, game playing, and general fiddling with windows at the click of a mouse, what more could anyone need? Indeed, a lot of microcomputers do exist in microcosms that are as big (or small) as their library of software, and their users are quite happy.

By nature, computers are a medium of communication. For communication to take place, we need a sender, a receiver, a message, and a medium. When we run software, we're communicating with ourselves; the sender and receiver are the same person, the message is how the data is displayed (not the data itself), and the medium is the computer. In this respect, it's almost like talking to yourself, except that people on the street don't stare. Or, it's like being put in solitary confinement; a prisoner can yack to his heart's desire, but the only one listening is himself.

Perhaps the best analogy is the process of thinking. That's not too far off, since we often use computers to handle and manipulate information that we used to do in our heads. Messages come into the brain and are analyzed and tossed around, but you're the only one who knows about them until you transmit those messages to someone else. That's where telecommunications comes in.

For information to go from one computer to another, we need something to connect the two. And since computer information is electronic, wires seem like a good connector.

NICATIONS



Unfortunately, setting up a bunch of wires for every possible connection would be time-consuming, expensive, and quite messy. Though some large organizations that do lots of data transfer daily do just that, it's more convenient for us microcomputer owners to use lines that already exist—telephone lines.

Now all we need is something to make the computer act like a person on the phone—that is, make noise. All those bits of information running around inside the computer are silent. Voltages change and electronic switches flip, all without a sound. In order to get that information moving across the phone lines, we have to modulate it, or change it into sound. The tool for the job is called a *modem*, which gets its name from the words *modulator* and *demodulator*.

Just like computers, modems come in various sizes, shapes, and colors, and they all offer various features. The primary job of a modem is to modulate information into sound, which is then sent whizzing through the telephone lines. When the sound reaches the other end, the other computer's modem demodulates it back into electronic information the computer understands. For our purposes, that's about as technical as things are going to get. Information goes from the computer to a box, over the lines, to another box, and into another computer. On to better things.

Never Satisfied

It may seem kind of strange for someone with a perfectly good computer to want to connect it to another computer miles away. But it's almost like buying a car when you already have a bicycle; the bike will take you almost anywhere you want to go, but the car can take you to many places the bike can't. Likewise with a modem—it connects your computer to distant computers, which may have programs and information on them that yours doesn't have.

Hobbyists buy modems for the same reason radio enthusiasts buy CB and ham radios—they serve little practical use, but they're a heck of a lot of fun. Having a CB radio in the car gives you a way to send for help in emergencies, but a lot of the time people just yack with each other about nothing in particular and everything in general. And so it is with modems. Sure it's possible to send and receive text files and programs, but hobbyists use modems mostly for connecting to remote electronic message systems (which we'll get to shortly) to exchange trivial information, jokes, rumors, programming hints, and like information.

Of course, there are also practical uses for modems: sending and receiving business correspondence, sales figures, and financial forecasts. However, a "serious" use of modems for the hobbyist, business, home, and for education is one that opens up that second dimension we mentioned earlier—information services.

The simplest information service is called a *bulletin board system*, often referred to as a BBS. Generally, BBSs are run in a person's home or a computer store, and anyone can connect up for free; the only thing you pay for is the

phone call. A BBS works much like the thumbtack bulletin boards you find at the local supermarket. People put up messages, and anyone who happens by the board can read them. Messages on BBSs aren't too different from messages on bulletin boards; it's not unusual to find notices advertising items for sale, ranging from computer equipment to mopeds.

Funny thing about BBSs. They work the same way as bulletin boards, but people use them more like walls for writing graffiti; one person will write something, and another will answer. Then another, and another, and so on. Messages on supermarket bulletin boards usually include telephone numbers for people to call in case they're interested in whatever the notice was about, but messages on BBSs rarely include phone numbers. It's almost as though BBS callers feel obligated to carry out all correspondence on the board, even if other persons live only a few miles away.

Wait a Minute, Mr. Postman

In addition to public bulletins, you can sometimes exchange private "mail" with other callers to the board. Some BBSs give out passwords, which informally turn callers into members (for lack of a better term). When BBS members call, they just type in their passwords, and the BBS recognizes who is logged on at the time. Passwords also enable members to exchange private mail. When a "letter" is sent, all that really happens is that the board creates a text file on disk, and only the person to whom it was sent can have access to that file. It's like having post office boxes and giving out keys.

Some BBSs have sections containing public-domain software that callers can *download* to their own machines. Downloading means reading a program listing from another computer and saving the listing on your computer. The opposite is called *uploading*, which involves sending a program listing from your computer to the remote one, which holds it and makes it available to other callers.

BBSs vary in size and capabilities; most are set up on microcomputers (Apple, IBM, TRS-80) with one or two disk drives and offer only one public board, while others provide several different boards within the BBS for interests such as photography, sailing, politics, dating, jokes, games, and, of course, computers. Some systems with hard disk storage capacities even have sections containing special-interest articles from large computer networks, wire services, and other sources.

Again, most BBSs are free, but some require a nominal fee for system maintenance (usually just a few dollars a year). Public systems like these are great places to meet others with similar interests, become involved in discussions of current issues, find information on almost anything, and pass the time when nothing good is on television.

Beating Dan Rather and The Tribune

BBSs represent simple versions of information services; they're free, public, and widely available (with an estimated six hundred across the country). At the other end of the spectrum are larger, commercial systems that provide, by subscription, immediate access to information that normally isn't available for hours (broadcast news) or until the next day (newspapers).

Systems that offer such timely information are called *information utilities*. Though the term was coined by The Source, one of three systems that fit the description, it also applies to CompuServe and the Dow Jones News/Retrieval Service. Often, people refer to The Source as STC (Source Telecomputing Corporation), to CompuServe as CIS (CompuServe Information Service), and to Dow Jones News/Retrieval as DJNS. All three offer up-to-the-hour news and information, but The Source and CompuServe also include other services such as BBSs, catalog shopping, electronic mail, game-playing, and computing power.

The state of Maryland even offers free computer access to track bills from inception to final vote.

Information utilities are timely, so information is added frequently. For researchers who need in-depth information, there are encyclopedic databases, the major ones being Dialog, BRS After Dark, and Orbit. These services let you search through numerous databases covering almost everything anyone ever wanted to know about anything. Law, agriculture, chemistry, magazine abstracts, engineering—anything.

From their early days, encyclopedic databases have been used mostly by professional researchers. But recently, the databases have begun acknowledging the growth of the personal computer market and adding features that appeal to a wider audience.

Other sources of information are the specialized business information databases. One such service is The New York Times Information Service (NYTIS), which offers the full text of each day's *New York Times* as part of its bill of fare. Unlike encyclopedic databases or a similar feature on The Source, NYTIS offers more than just citations or abstracts. In addition to the full version of *The Times*, NYTIS offers abstracts from other newspapers and periodicals.

NewsNet is a service that provides on-line versions of more than one hundred specialized newsletters and professional publications. Areas include advertising and marketing, education, corporate communications, energy, real estate, government, investments, electronics and computers, and aerospace. And that's certainly not all.

Like Buying a Car To Hang Fuzzy Dice In

Most Lisas and Macs are being used in business and professional capacities. It's unlikely that their owners bought them just to use for communicating. Nonetheless, communications alone is almost a good enough reason for getting a personal computer—maybe not a Lisa, but some kind of computer.

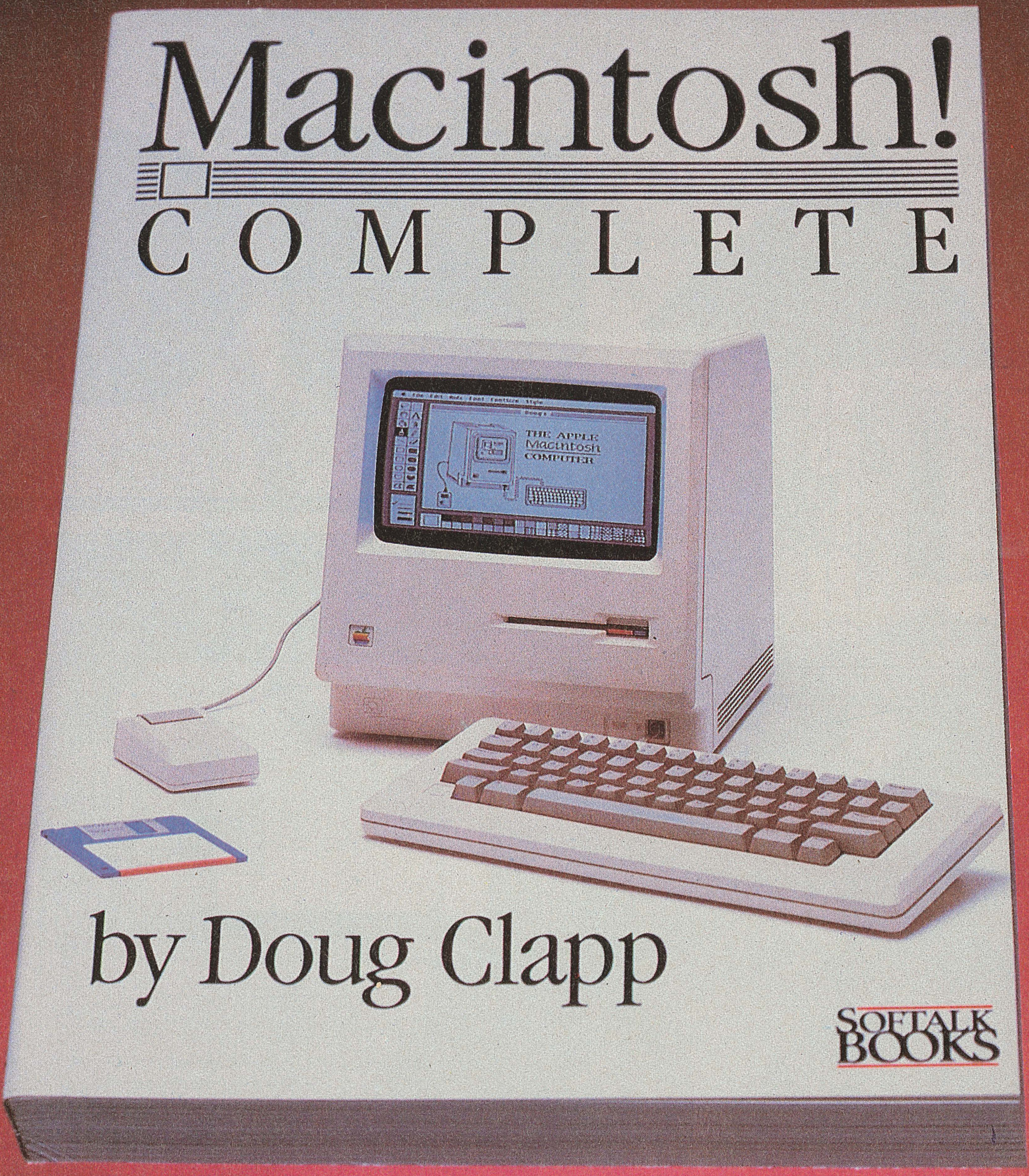
This brings us back to that second dimension again. How many of us really use computers to keep track of the household budget? Sure, some of us do, but a lot of us do just fine without a software program to tell us that we're broke or rolling in the dough. Communications opens up our world more than any other tool.

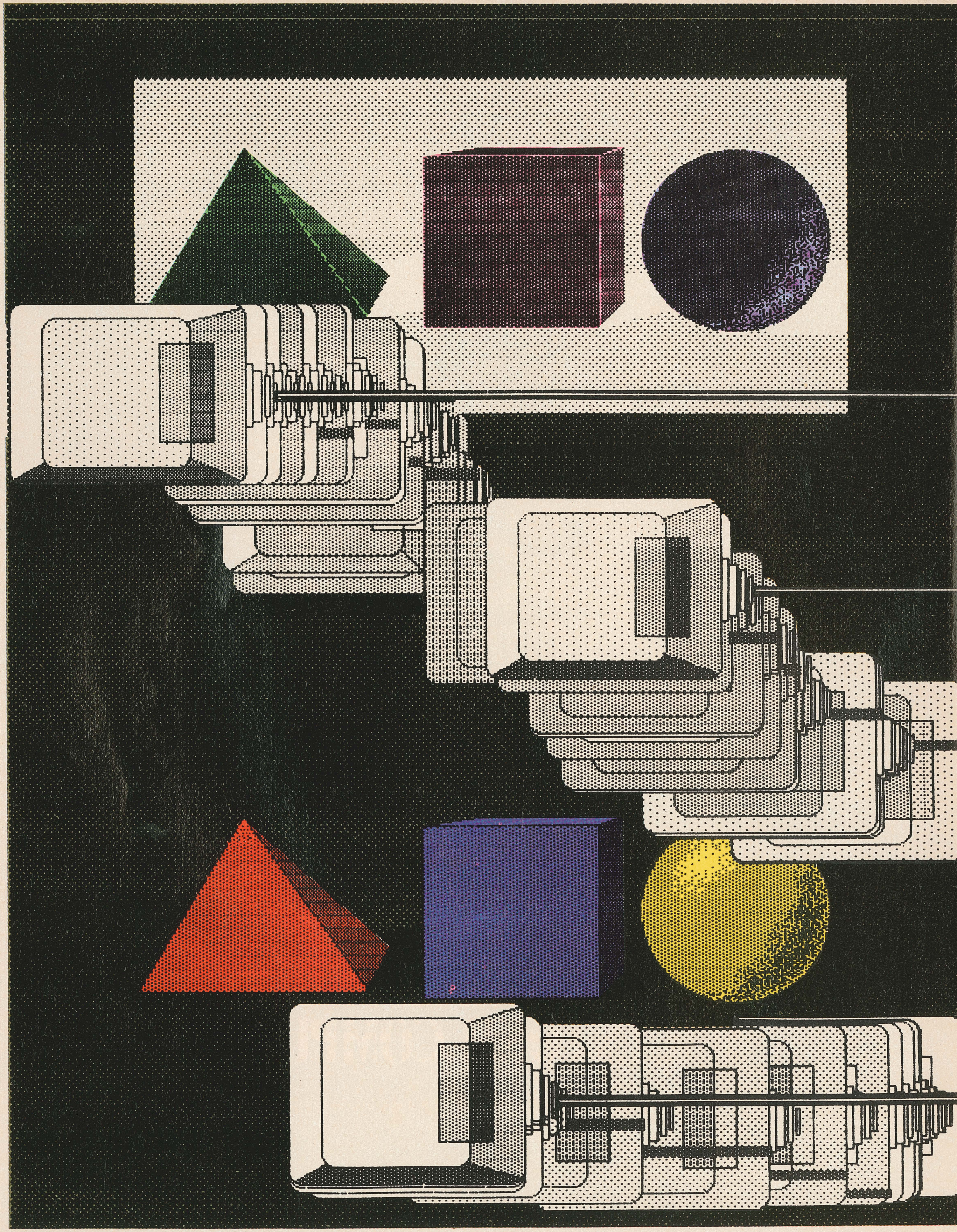
Databases are becoming easier for the layperson to use. Home banking by computer is just as easy as using the bank's automated teller machine. Information services are becoming more consumer-oriented as their proprietors respond to the increasing size of the computer market; what used to be available only to libraries, researchers, and businesses is now coming into the home, and it's happening very fast.

In the past, some people feared that more sophisticated computer technology would have a malevolent effect on us because it would give governments more power to keep track of how we spent our money, who we knew, and what we did in our spare time. Information would be in the hands of the powerful few, while the masses would be left ignorant. Fortunately, the reverse is true.

Computers are available to the public, and they're being used for sharing and spreading information, not hiding it. In Michigan there's a BBS that lets constituents communicate directly with their state officials. The state of Maryland offers free computer access to track bills from their inception to final vote. Currently, access is available only from two information terminals located in Annapolis, but the state is looking to implement direct access from personal computers in the next few years.

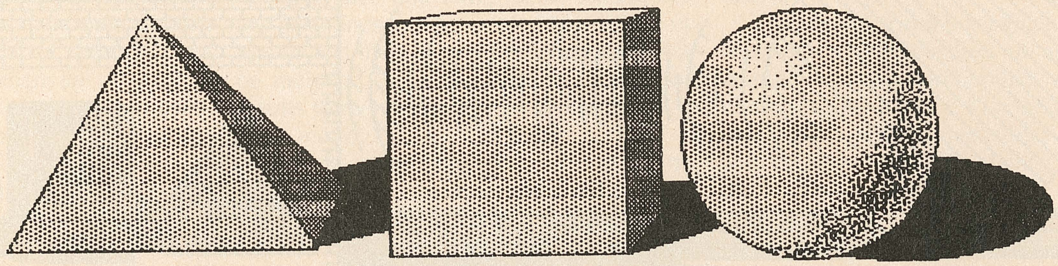
Prices of computers are dropping very fast, and as computers become available to more people, communications services like the ones we've covered here will similarly become available. With access to information services, the networks of people sharing information will grow. Money continues to separate the haves from the have-nots; but the mass availability of information just may narrow the gap between the "knows" and "know-nots."


Macintosh!
COMPLETE
THE APPLE
Macintosh
COMPUTER
by Doug Clapp
SOFTALK
BOOKS



By CRAIG AND NANCY CALSBEEK

Renaissance Mouse



So you've bought yourself a Macintosh. You've unpacked it and have read all the documentation. You've patiently gone through the cassette-taped tutorials, accessed the control panel, adjusted the volume of the beep, and probably changed the desktop a couple of hundred times.

You've amazed all your friends with the incredible power you now have at your fingertips. You're all set up and ready to roll—now what can you do with it? *MacWrite* is just the word processor you've been looking for, and in your heart you know that *MacPaint* is much more powerful than its friendly little icons suggest.

Your instincts are correct—*MacPaint* is incredible. It's more than just a great introduction to the power of your new computer. Written by Bill Atkinson, *MacPaint* combines some of the best advances in microcomputer graphics developed in the last ten years, plus a few secrets that were locked into the Lisa and, more recently, into the Macintosh.

MacPaint offers an astounding array of functions, which include drawing, painting, and the manipulation of text and graphics. Even if you don't fancy yourself sitting down and creating a fine-art masterpiece, you're likely to find the Mac an invaluable business tool for designing professional-looking graphics.

One cannot deny the importance of illustrating a complicated idea visually. Pictures seem to cut through the obvious inadequacies of the written word and act as a universal language for all of us. The tools we use to give form to our ideas have always been a reflection of our age, and the computer is no exception.

Computer graphics have only recently become accessible to the average computer user. Previously, graphic functions on a computer required a much greater storage capability than the average personal computer could provide. Early on, Apple recognized the importance of offering graphics for the user and has made this a basis for many of the advancements in the personal computer market. With the introduction of Lisa Technology in the more affordable Macintosh, Apple has given the power of graphics to everyone.

The business graphics field has been revolutionized by computer technology. The computer has become the star of trade shows and is a logical choice for training films because it provides a way to explain difficult ideas visually. Graphics are also an asset in the production of training aids, sales presentations, and product demonstrations. Experts have estimated that in 1983 the marketplace

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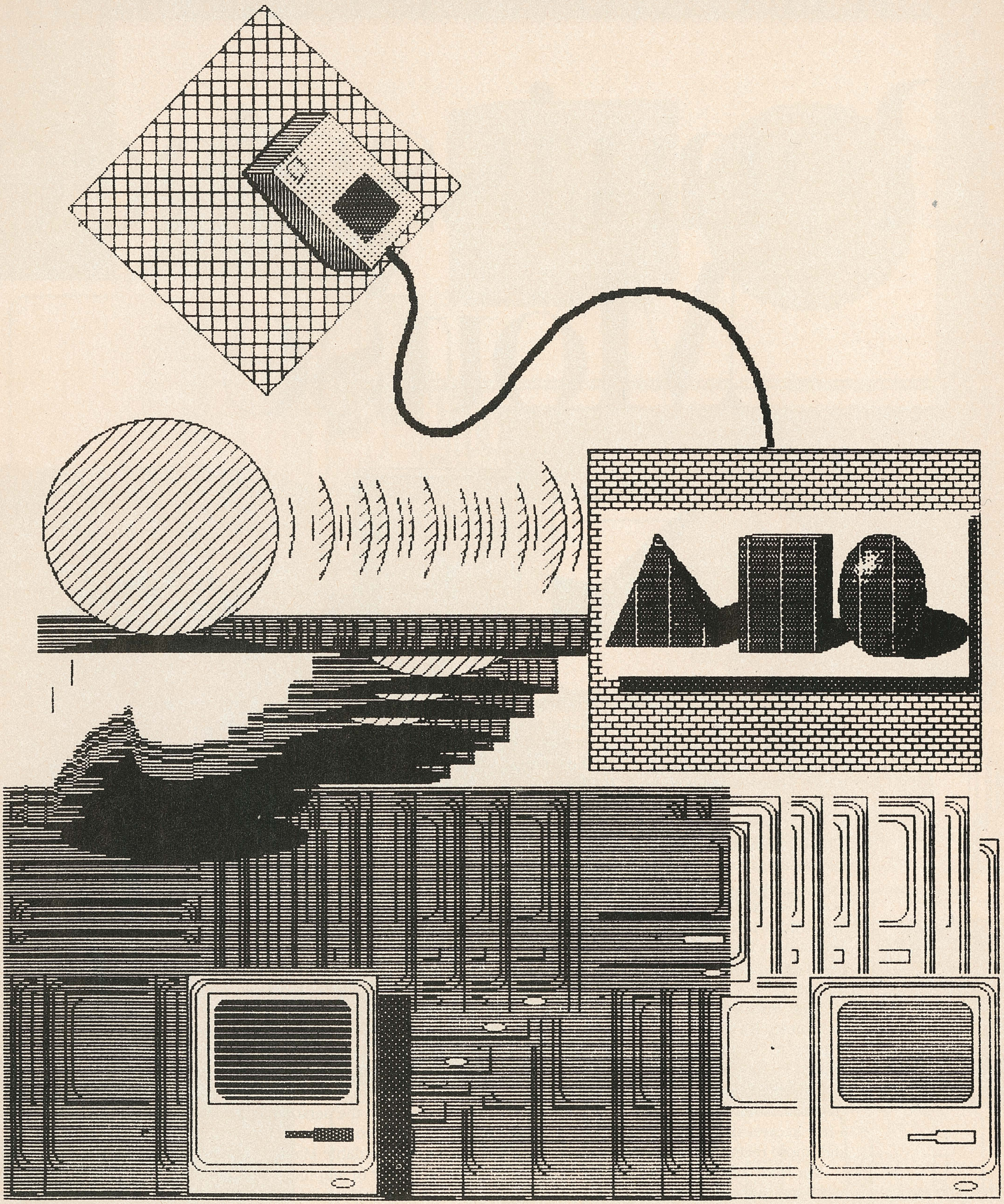
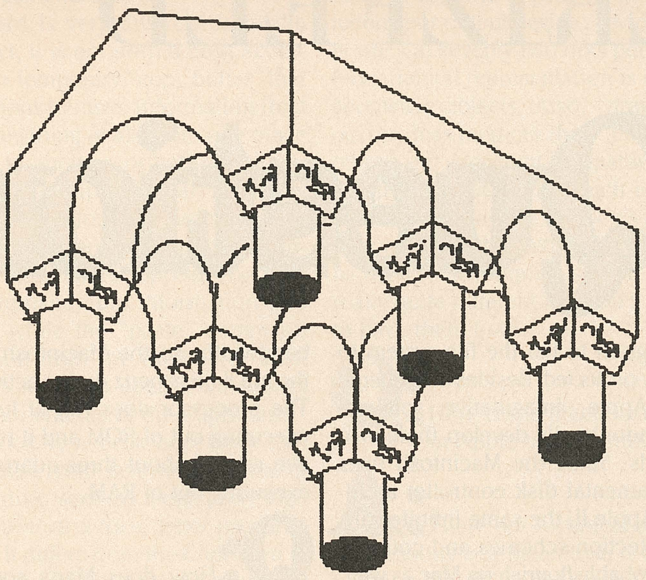


bought $750 million worth of business graphics. Industry watchers believe that this figure will increase to more than $6 billion by 1990.

In the coming months, this column will focus on Macintosh and Lisa graphics and their applications—and on how they can be integrated into your life and your business.

You'll be introduced to a new way of looking at, as well as really seeing, things in this world. With the amount of visual bombardment we receive daily, it's a wonder we have any sensitivity left. Drawing allows us to analyze, experiment with, and translate the world around us.

Drawing is a natural ability. Ten thousand years ago, before primitive man invented tools, built shelters, or cultivated the land, he drew. Using whatever he had at his disposal, he scratched images into the walls of his cave. His perception of the world around him was illustrated through these early cave drawings.



Give a child a crayon and a piece of paper and you'll observe an instinctual and natural form of expression. It's as if we were all born with this gift and, by lack of practice, have lost it. In a child's case, there are no pretenses—the drawing process is an end in itself. It doesn't matter if the objects are drawn "just right." Children place no expectations on their finished drawings. For them, the true joy is in the drawing and creating.

In contrast to children, most adults apologize for not being able to "draw a straight line." With an eye on the end result, many adults find themselves totally frustrated and lose interest in drawing at an early age.

If you're one of those people who haven't picked up a pencil to draw since grammar school, you may actually have an advantage in the eye/hand coordination required when using a mouse and the video display. You're likely to find it a little strange at first, but you won't have to break any old habits you may have developed using the more conventional drawing techniques. After all, we are the first generation to have a totally new drawing and graphic-producing device at our disposal—a device that can produce images that couldn't have been imagined years ago. A new tool, yes. New principles, no.

One outstanding feature of *MacPaint* is the function that enables you to save the pictures or text you use frequently (such as a letterhead) onto the Macintosh Scrapbook and then cut and paste additional pictures or text from another document to the existing one. A scroll bar is used to look through the Scrapbook—a sophisticated, time-saving feature that you'll find quite helpful in your graphic problem-solving.

Graphic design is probably the most practical feature of *MacPaint*. In future columns you'll see how you can design newsletters, reports, brochures, and illustrations. We'll discuss the typefaces available on the Mac, as well as what's involved in selecting and mixing typefaces to best achieve the desired look. Because the typography can be manipulated in size and style, logos, letterheads, and headlines can be created to brighten up reports and files. Step-by-step illustrations will be included that show how to prepare the results from your printer for reproduction in other media.

More than a hundred software and original equipment manufacturers and developers are now working on applications and add-ons for the Macintosh. Among their products are many programs that will greatly increase your graphic repertoire. The introduction of new graphic software for the Macintosh will be of prime importance, and we'll review and introduce these packages to you as they're released.

In future columns we'll look at the nature of solid forms and how they serve as building blocks for all your drawings. We'll discover how the basic shapes come into play with everything you design. And we'll learn how to determine light sources and shadows to give your drawings extra dimension and how to use the Mac's shading patterns to help you achieve them. We'll also discuss your brush palette and how to choose the right brush to achieve the results you're looking for.

Design and composition will be covered, and you'll learn how best to take advantage of Mac's scrolling ability and window configuration. We'll cover the basics of drawing and the rules of perspective and reflections, as well as discussing abstracts, landscapes, portraits, and the commercial applications of Mac art.

Thus far, microcomputer graphics has been relegated to the position of arcade game graphics and pie-chart builders, with low-resolution results to boot. The loftier pursuit of creating a tool to express ideas and dreams with detail and clarity has finally arrived. And the Mac is the brightest bundle delivered by Apple this year.

By ANDY HERTZFELD

68000 Questions

Q: Will printers other than the Imagewriter work with Mac?

A: Although it is possible to make any printer equipped with a serial interface work with a Macintosh, Mac really only works well with a printer that has graphics capability. To interface a new serial printer with Macintosh, you must write a printer driver and place it on the same disk as the application you are printing from. Right now there is no way to talk to a printer that does not have a serial interface.

The first release of *MacPaint* won't work with any printer except the Imagewriter because it uses its own internal printer driver. The next release of *MacPaint* will use the system printer driver and therefore work well with any printer that has adequate graphics resolution (seventy-two square dots per inch).

Many people ask if Apple will provide a driver for a daisy-wheel printer. Apple probably will because a lot of people want one, even though it's pretty silly since most daisy-wheel printers don't have a decent graphics capability. Daisy-wheel printers can't take advantage of Mac's neatest features (like multiple fonts in many styles and sizes and detailed graphics).

If I were a clever printer manufacturer and I wanted a share of the Macintosh market, I would equip my printer with an Imagewriter-emulation mode (you only need to emulate a small number of graphics-mode commands to be Mac-compatible), which would guarantee that it would work with every Mac program.

Q: How will copy protection be accomplished on the Mac?

A: Nobody likes copy protection very much (except for the authors of nibble copy programs); it seems to be one of the necessary evils of our industry. We didn't want to have it on Macintosh, but we're stuck with it since most of the software companies demanded it. The Finder has a way of finding out whether a disk or file is copy-protected; if it is, the Finder will refuse to copy it. Apple provides a program to tell the file system to make a file copy-protected. Besides the scheme provided by Apple, imaginative software hackers will undoubtedly develop their own unique methods. Since the Macintosh uses the same fundamental disk controller architecture as the Apple II, the same infinite variety of copy-protection schemes and counter-schemes will probably flourish on Mac as well. Software developers must be careful that their copy-protection schemes work in the Lisa 2 environment, since Lisa's disk controller is very different from Mac's.

Q: How large can selections on the Clipboard be?

A: The maximum size of something on the Clipboard is determined by the application that's currently running. In some applications the Clipboard size is limited by the amount of free RAM, while in other applications it is limited by the amount of free space on disk.

Q: Is there any difference between the printer port and the modem port?

A: The hardware for the printer port and the modem port is identical; they are the two channels provided by the 8530 SCC chip used in Macintosh. However, there is a slight difference in the way the software treats the two ports. Port A (the modem port) is polled by the disk driver to make sure we don't lose characters during disk I/O, while Port B (the printer port) is not. Thus the modem port should be used for input-oriented devices, while the printer port is best for output-oriented devices.

Q: Does the Macintosh really run at the full 8 megahertz?

A: The clock rate of Mac's 68000 microprocessor is approximately 7.9 megahertz, but that is not the whole story. The microprocessor's clock rate is not as important as the speed at which it accesses memory. Mac's bit-map display competes with the 68000 for memory bandwidth, so the Macintosh cannot run at the full 8 megahertz during active display time. The processor does run at full speed when executing out of ROM and it runs at an effective rate of about three-quarter speed when executing out of RAM.

Q: How does Mac's sound capability work?

A: The Macintosh hardware provides a simple, elegant sound capability. At the end of every video scan line (once every forty-four microseconds), Mac fetches a byte from a fixed-memory buffer and converts it into an analog voltage level during the next scan line using a pulse-width modulator.

The Mac ROM includes a flexible sound driver that has three different modes of operation. One of the most interesting is the four-voice mode, which provides four simultaneous channels of sound. Each channel has its own pitch (with twenty-four-bit resolution—that's more than sixteen million different pitches!) and 256-byte waveform-definition table. Another interesting mode is the "byte-mapped" sound mode, which is capable of pumping out arbitrary waveforms of any length at any rate. The byte-mapped mode is useful for sound effects and speech synthesis.

Apple has commissioned Mark Barton, the author of *S.A.M.* (*Software Automatic Mouth*) on the Apple II, to write a speech driver for Mac, which Apple will provide to interested software developers for a nominal licensing fee. It turned out really great—in fact, we used it at our annual shareholders meeting to allow Macintosh to be the first computer to introduce itself!

Q: What's the difference between the Note Pad, the Clipboard, and the Scrapbook?

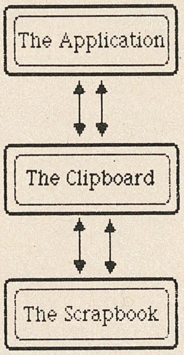
A: The Note Pad is a desk accessory that allows you to jot down up to eight notes no matter what else you are doing. At any time you can edit or browse through your notes, which are saved to disk in the file called "Note Pad File." You can also cut and paste between the Note Pad and the current application. One limitation of the Note Pad is that each note

cannot exceed 256 characters.

The Clipboard is very different from the Note Pad; in fact, it is not even a desk accessory at all. It is a temporary "copy buffer" that allows applications to move information (text or graphics or anything at all) from one place in a document to another, or between different documents. The Clipboard can hold only one piece of information at a time; when a new piece of information is added to the Clipboard, its current contents disappear. The "cut" and "copy" commands put information into the Clipboard, while the "paste" command takes information from the Clipboard. Most applications allow you to open a window to view the current contents of the Clipboard.

The Scrapbook is a desk accessory that allows you to save your favorite snippets of information to disk, such as a company logo drawn in *MacPaint* or a form letter prepared with *MacWrite*. It differs from the Clipboard in that it can hold up to 256 different pieces of information at a time; a scroll bar is used to browse through the Scrapbook and select a particular entry.

The following diagram explains the relationship between the Clipboard and the Scrapbook:



Both the application and the Scrapbook can communicate with the Clipboard, but not with each other directly.

Q: Explain the difference between *MacDraw* and *MacPaint*.

A: *MacPaint* is an easy-to-use, elegant "bit-map editor" that's fun and wonderfully expressive. It allows you to edit graphics on a dot-by-dot basis. Its fundamental metaphor is ink on paper; it provides a useful set of tools to spread the ink around, but once the ink is placed, it forgets the distinction between individual objects. It represents the drawing as a large array of tiny dots.

MacDraw is a more object-oriented graphics editor that allows you to compose complex images from a few simple building blocks such as lines, squares, circles, and text. Since it represents the drawing as a collection of these building-block objects, it is able to retain the distinction between objects and allows you to edit them individually or collectively.

One advantage of *Draw* over *Paint* is that *Draw* is capable of printing at whatever resolution your output device provides, while *Paint* is stuck at seventy-two dots per inch, since its fundamental representation is dots instead of geometric objects. Also, "drawings" usually occupy less memory than "paintings." On the other hand, *MacPaint* is capable of much more detail than *MacDraw*, which is not nearly as expressive or as fun to use as *MacPaint*. The bottom line is that, although the programs can be used to accomplish similar tasks, they are really quite different and you'll probably want to have them both.

Q: How come Macintosh isn't IBM PC- or Apple II-compatible?

A: There are technical and philosophical reasons why Macintosh is not compatible with the IBM PC or the Apple II. Basically, the Macintosh uses the Motorola 68000 microprocessor, while the IBM uses the Intel 8088 and the Apple II uses the 6502. Furthermore, achieving true compatibility is a complex task involving far more than using the same CPU (for example, the Apple II, Atari 800, and Commodore 64 all use the 6502, yet they're completely incompatible) and would add a lot to the price of the machine.

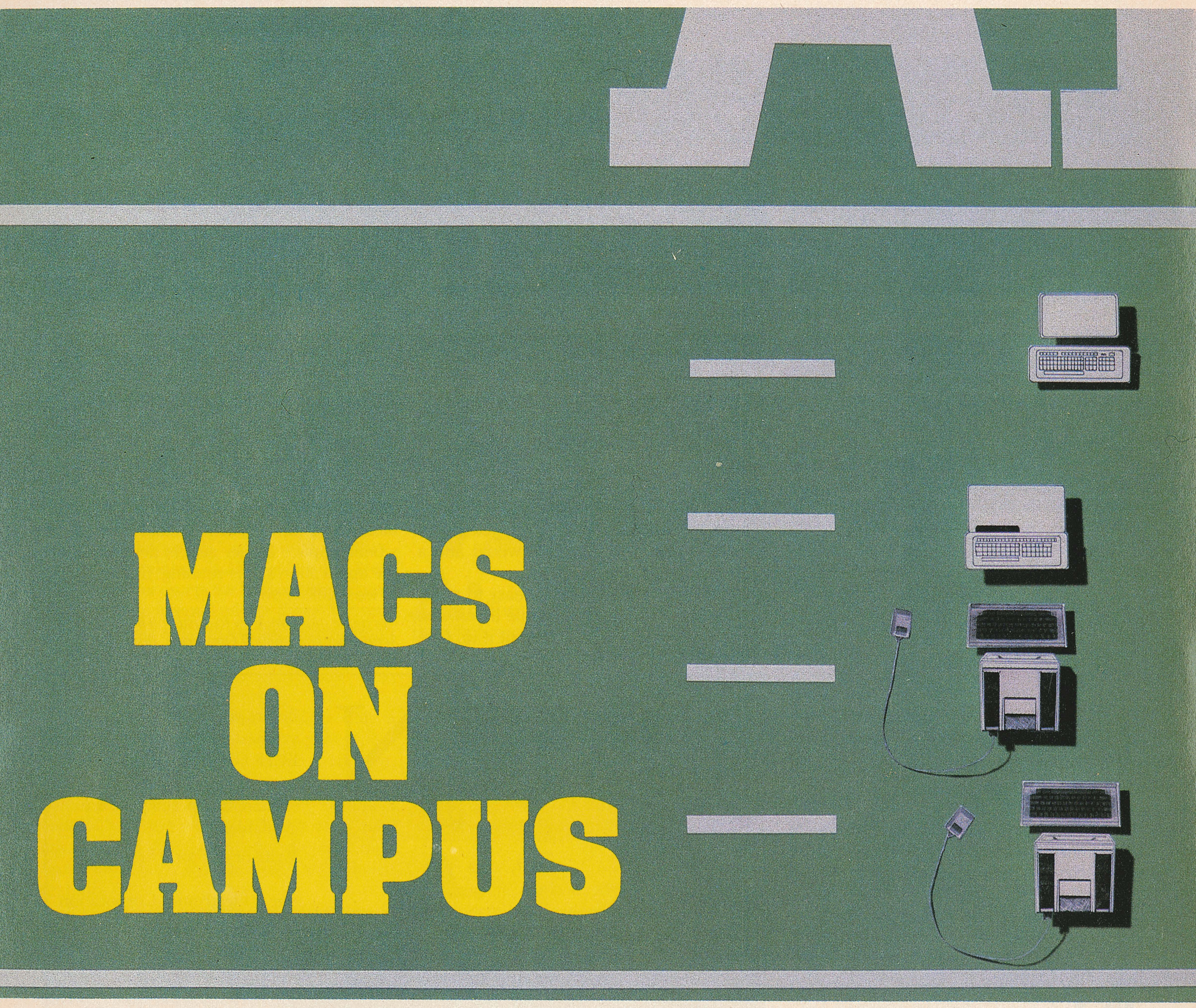
But even if it was relatively easy to make the Mac run the IBM PC or Apple II software bases, we probably wouldn't want it to. One of the joys of Macintosh is its standard user interface and integration capabilities; all applications share a common user interface and can easily share information. Mac applications are usually far easier and more fun to use than their older-generation counterparts; if we could run the older generation of programs, software vendors would be less motivated to "go for it" and rewrite their programs for this new, far superior standard. Once Mac acquires a substantial library of applications, they will be so much better than IBM PC or Apple programs that very few people will want to run the old stuff.

Q: How much of the 128K of RAM does the System take up, and how much is available to applications programs?

A: The System takes up about 40K of the available 128K, leaving about 88K for the current application to use. Of the 40K that the System uses, about 22K is used for the bit-map display and sound buffers, while 16.5K is used for the "System heap," which contains important System data structures for the file and the I/O system as well as other System tables and drivers. The actual amount of working space a user gets is determined by the application she is running; usually this is at least 40K or so.

Got a question? We'll try to answer it in this column. Send queries to 68000 Questions, Box 7041, North Hollywood, CA 91605.

By MIKE FERRIS



MACS ON CAMPUS

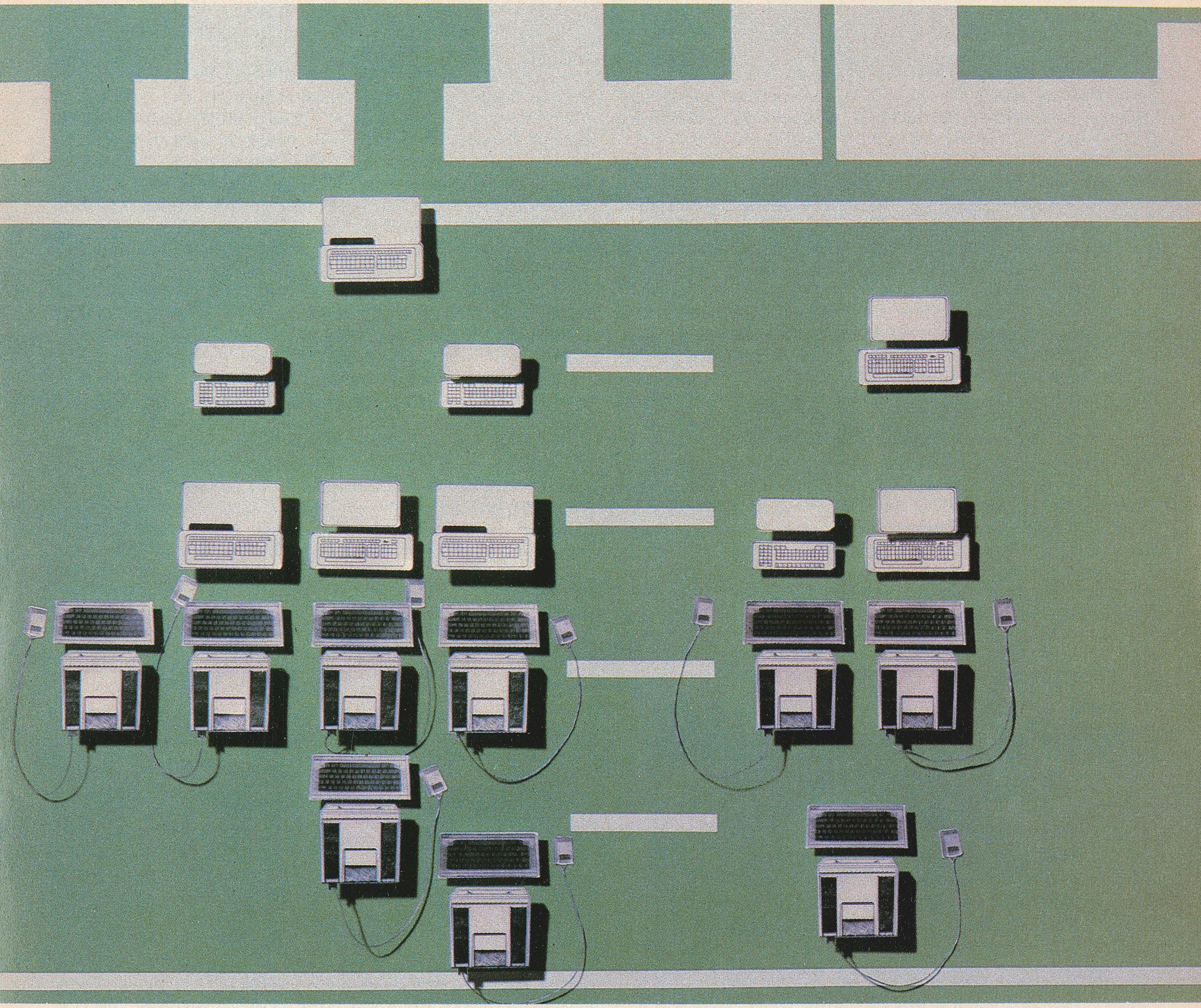
> Part publicity stunt and part marketing strategy, the AUC has been much talked about, much ballyhooed, and little understood.

Once upon a time, college campuses were hallowed geometries of stone and ivy where America's youth trooped through four years of raging adolescence in search of something called "higher education."

Nowadays, on the campuses of America's universities, the youth of this generation are tagged as the "knowledge workers of tomorrow" and Joe College can expect to get something called "state of the art" along with his curriculum, which means—in the competitive and access-rich eighties—the latest in personal computers.

Computer companies like Zenith, DEC, and IBM have, for some time now, been offering their wares to universities at deep discounts, sometimes up to 50 percent off, as in the case of Zenith's Z100 series. The objective behind this money-losing proposition is establishing brand loyalty—the future leaders of tomorrow will also be future consumers. It doesn't hurt that significant advances in computering, such as UCSD's Pascal and Dartmouth's Basic, have emerged from college campuses in the past.

Apple, which has always been odd man out on campus, is attempting to make its presence felt in the university market, as well as to



tap some of the intellectual activity going on there. The company has managed to snare 70 percent of the kindergarten to high school market, but the B.C.O.C. (big computer on campus) doesn't make that characteristic beep.

Tired of continually losing sales to its more muscular competition, Apple has come up with a plan that it hopes will shift the balance in its favor and put the Mac on the campus map. "Students expect these kinds of tools these days," says Dan'l Lewin, college marketing manager for Apple. "It's important for us to be there at this time." In the major college market of sixteen- and thirty-two-bit computers, "Apple has been previously specked out of the buying cycle."

When Lisa Technology brought the company up to spec, Apple scrambled. "We're on an even footing now, perhaps even a step ahead, because of our tools," says Lewin. It was time for an aggressive arrangement with vendors, and the college division began its run for the roses in mid-1982, with a plan inspired by a marketing person's suggestion of the Mac as a higher-education tool.

The result is a controversial program known as the Apple University Consortium (AUC), which has been called everything from "Apple's most recent coup" by *Time* magazine to an exercise in "weird anti-capitalist est-like idealism" by *InfoWorld*. Part publicity stunt (the program was announced on the same day as the Macintosh) and part marketing strategy (Apple stands to gain from the boost in Mac software development), the AUC has been much talked about, much ballyhooed, and little understood.

Terms of Agreement

Apple has signed to the consortium twenty-four institutions of higher education, which are expected to buy $2 million worth of Apple products each over the next three years. Most of the sales are expected to be of the red-hot Macintosh, which the colleges can purchase for $1,000 each, or about $650 less than dealers pay for them. Two AUC members, Dartmouth and the University of Michigan, have already agreed to purchase six thousand Macs each. The University of Michigan has said that it may eventually buy a computer for each of its thirty-six thousand students.

According to Lewin, it's up to each university to decide how it wants to distribute the Macs—each may set its own price on machines or elect not to charge for them at all. The University of Texas is offering Macs to students at 10 percent above cost, the University of Michigan is reselling them at a flat $1,350, Brown is bundling them with *MacPaint* and *MacWrite*, and the University of Michigan's College of Engineering is renting them at a loss.

While Apple won't discuss the details of the contract, the University of Texas has said publicly that its agreement with Apple is non-binding. Apple reported $60 million in commitments as of January 1984.

As their part of the arrangement, the schools agree to develop and share software and any design changes with one another and with Apple. "Who knows," says Lewin, "the next best thing to sliced bread might come back to us." The consortium members also agree to appoint at least one technical representative and one administrative representative to the consortium, who will meet once a year.

Electronic mail capability is also a requirement of the member schools. One goal of the AUC is to eventually network the universities together to speed up the exchange of courseware and research and development. "Our desire is to find out very quickly from leading institutions what can be done with the Macintosh," Lewin told the college press, "as well as to find out what end users want."

The members of the consortium are Boston College, Brigham Young, Brown University, Carnegie-Mellon, City University of New York, Columbia, Cornell, Dartmouth College, Drexel University, Harvard, Northwestern, Princeton, Reed College, Rice University, Stanford, University of Chicago, University of Michigan, University of Notre Dame, University of Pennsylvania, University of Rochester, University of Texas, University of Utah, University of Washington, and Yale.

Apple's initial press release of January 24 describing the consortium listed only twenty-three members; the University of Texas asked to be excluded from Apple's AUC announcement because, according to the university, it "can't have the name of the University of Texas appear as an endorsement" for Apple's product.

Turning On

Members of the twenty-four consortium schools are excited about the networking possibilities of the AUC for both local and interschool use. The University of Chicago, which has no classical engineering program, reports that it's interested in finding out what schools like Carnegie-Mellon are doing with their computers.

At Brown, they're working on connecting their Macs to the university's campuswide broad-based network of thirteen to fourteen hundred ports, not including dorms. "We'll probably put them in peripheral centers, too," says Bill Shipp, associate provost at the university. Sixty Lisas and "ninety-plus" Apollo workstations are already installed. "The Macintosh is a very seductive machine," says Shipp. With only twelve Macs so far on a campus of sixty-eight hundred students and faculty, Shipp says the big buys will come in September, after students have saved money over the summer; but already the order phones are ringing off the wall. More than three hundred Macs have been ordered so far.

One of the reasons that Brown went with the AUC is because of the access it will provide to development people at member schools, says Greg Marks, assistant vice president of academic affairs. The first one hundred Macs to arrive on the campus came at an opportune time. "A PdP 11 network has been in place for years," he explains. Currently, Brown is converting from a pure Bell phone system to a private phone system that will include an extra outlet for ninety-six-baud computer traffic in every office and dorm.

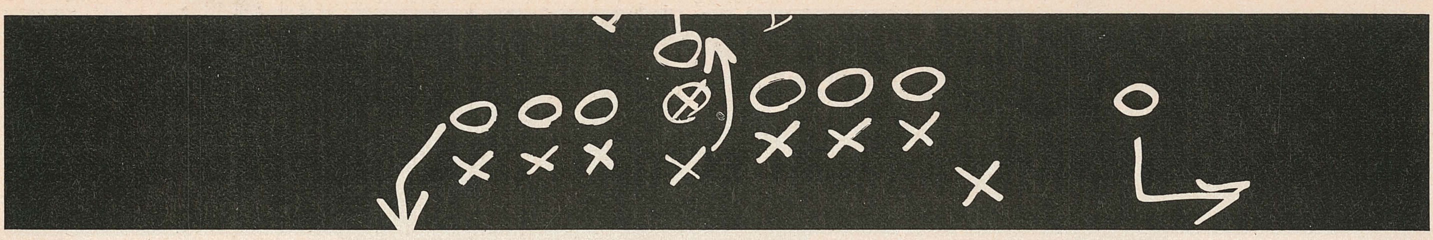
Marks says that the 68000 series is "the right stuff for the middle range" in computers at the university. The machine at the high end of the spectrum is the Apollo. In the College of Engineering, where graphics are important and state of the art is a requirement, "IBM PCs will be the first to go" when the Macs are installed.

> "We regret that we missed a lot of schools. We tried to be fair and equal to the best of our ability."

At the University of Texas, where both Apples and PCs are popular among the forty-six thousand students, there are no immediate networking plans that include the Macintosh. The use of computers is specific to department need within the university, says G. Charles Franklin, vice president of business affairs. "Networks will develop as needed," he comments. Another spokesperson says there are already fourteen Macs in the administrative data processing department and the campus computation center. Fifty more are on order for the liberal arts, education, and computer science departments.

Tuning In

The AUC officially began in August 1982 when Apple moved Lewin from markets development on Lisa to the Mac division as university liaison, after a consultant had done a little groundwork. "It was just an idea at first," Lewin says, "an idea that evolved into a program." Working without a formal business plan, Lewin spent from November 1982 to January 1983 on the road, "entrenched in it," talking to uni-



versities and touting the Macintosh. Macs were previewed by the prospective AUC members under the same nondisclosure agreement that Apple had with developers and the press. While Lewin was out getting a feel for the program and perking up interest, a business plan, contract, and proposal were drawn up back at Apple in March.

According to Lewin, the original AUC goal was to sign up six to ten schools. Brown was the first to be signed, in May 1983. The University of Michigan came on board in August, during the first round of negotiations. Stragglers were rounded up in October. A deadline of late December was set mostly to put a lid on the project for Apple, says Lewin. A technical support staff was added in January. "Apple's way is to establish an aggressive posture to seed the market, then staff to support," he explains. "We're low head count around here."

Since Apple doesn't have "thousands of people to find out who can do wonderful things with our technology," says Lewin, membership candidates were considered using criteria such as projects they proposed for the Mac. Some of these projects included a writing program for engineering and business students at Drexel, Dartmouth's adaptation of its Basic for the Mac, the testing of a program to teach Pascal at Brigham Young, and experiments using the Mac in a research network at Rice.

Other consortium choices were based on who was already buying heavily from Apple (the University of Michigan has 130 Lisas), where Apple could best follow up with technical support, or where interest in computer development was public knowledge, such as at Carnegie-Mellon and Stanford universities. "We regret that we missed a lot of schools," Lewin says, aware of the student uproar at one university. "We tried to be fair and equal to the best of our ability."

Lewin says that Apple will be offering discount Lisas and Macs to other educational institutions under the company's educational purchase program, but has no plans to extend the consortium.

Not all institutions interested in the consortium were accepted, Lewin told the *Chronicle of Higher Education*. Some "didn't have enough conviction about their projects," he said, although the company was "not about to judge the merit of the projects."

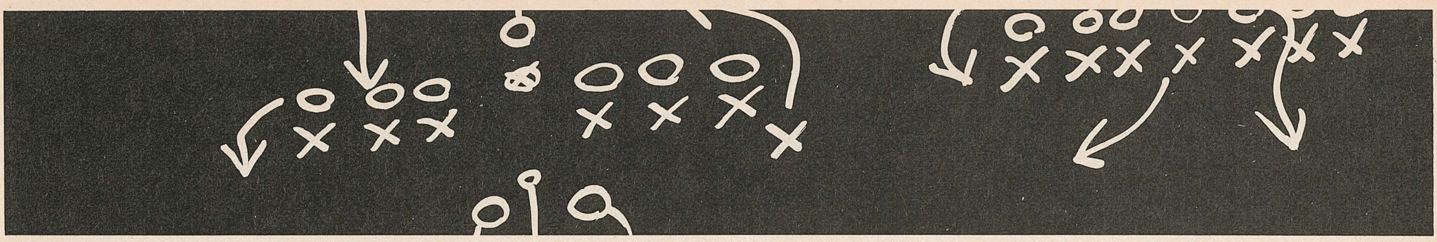
Dropping Out

One university, California Polytechnic State, declined Apple's invitation to join the AUC. The university's board of trustees and the state legislature decreed that the state-financed school couldn't legally engage in "unfair competition or a circumvention of the bidding requirements," said Cal Poly spokesman Stan Bernstein. The $1,000 Mac price tag was also deemed unfair to local dealers who couldn't match it. As a result, one hundred students marched into the school president's office with a petition of 1,000 signatures protesting the rejection.

The University of Texas also buys all of its equipment through state procedures but was able to join the AUC by tapping other source funds, according to G. Charles Franklin.

Rumblings in Macademia

So far, so good. A nice clean arrangement, good for Apple and good for the educational community. However, since the AUC



announcement at the January Apple stockholders meeting in Cupertino, California, the consortium plan has taken a wallop from its most vocal critics, the computer trade press and dealers. Among the first rumblings in the press that there might be some holes in the program were the comments of *InfoWorld* columnist John Dvorak. "The $1,000 deal just won't fly," he wrote. "Face reality; at half the universities the kids will unload their machines just to get some cocaine."

A black market in Macintoshes was a factor not overlooked by Apple, just underpublicized. "I guess I didn't communicate the focus of the project correctly," says Lewin. "We're specifically looking for a moral commitment here and are very concerned and aware of possible abuse of the AUC agreements." Lewin expects Apple to take action if there are any violations.

The standard contract that a university buyer will sign, says Lewin, contains a fraud clause and a guarantee of the university's right of refusal on resale within two years. During that time, a university can turn down unauthorized second-party sales. Some AUC members, like Brown, are extending this to four years. Students, faculty, and staff who buy Macs must be full-time, must present suitable identification upon signing, and must give their Social Security numbers.

While it all looks good on paper, the sheer volume of Macintoshes expected to be bought under the agreement may speak otherwise. A case in point is the University of Michigan in Ann Arbor, "the largest university in the smallest town" of the AUC, according to a university spokesman. In a town of one hundred thousand people, one local dealer estimates that 40 percent of the population is connected with the university and therefore eligible to buy Macs. Greg Marks says the student population is roughly thirty-five thousand and that faculty and staff comprise twenty thousand.

The University of Michigan is taking several unique precautions in the private sales arena, according to Marks. A database has been set up to double-check for attempts to procure more than one Mac. "We've already caught one," he says. The university is also branding the Macintoshes it sells (one hundred have arrived and three hundred are currently on order). An inch-high "U of M" is burned into the back of the casing with a soldering iron for instant identification. "We want to make it clear that enforcement is something we take seriously," says Marks, adding that the university will prosecute violators.

Breaking and Entering

Despite the complex precautions the university is taking, the consortium appears to be vulnerable to abuses, according to spokesmen for two of Ann Arbor's four computer dealers. John Fitzgerald, sales manager of Complete Computer, says that two people have come in and taken back their Mac deposits. Both admitted they weren't connected with the university but were getting Macs through the institution. Jeff Enwood, owner of a ComputerLand, says he has gotten about "six calls for cases," an item he was required to stock when he sold the Mac up until February.

ComputerLand of Ann Arbor just recently terminated its relationship with Apple, according to Enwood. The AUC was only part of the problem, he adds, although Apple sales have diminished since Christmas. For a retailer, it's "tough to compete" with the consortium.

The University of Michigan situation is "forcing us to reduce our

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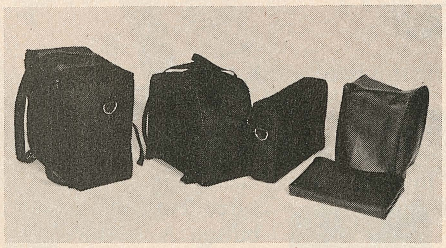

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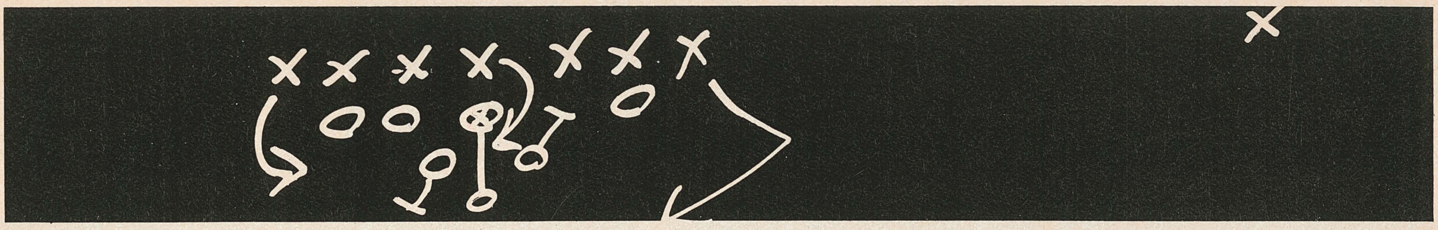


alliance and move away from Apple—sales have fallen off the table," says Fitzgerald. Before the AUC, Apples sold at "typically eight to ten a week." Currently, it's about two per week. "When you slice the pie" between Ann Arbor's one university and four dealers, he adds, "there isn't a whole lot left."

The biggest cause of friction among dealers resentful of the consortium is that "they can sell for less than we pay," says Fitzgerald, whose shop is only blocks from campus. "And that's not too bad for a retailer who pays no taxes." The university is reselling the Mac at $1,350, which is "twenty to thirty points" below a dealer's cost, Fitzgerald adds. In the university's College of Engineering—already loaded with IBM PCs, Lisas, and Apollos—six thousand students will be supplied with Macs at a $100-per-term user's fee. After four years, they can take the computers with them.

In response to the uproar the AUC has caused among local dealers, Marks says that if the university hadn't joined, the sales of Macs to the college wouldn't have been significant. "If Apple hadn't done it, they would have been noncompetitive in the university market," he says. The University of Michigan, he adds, would probably have recommended that students purchase the DEC Rainbow, which is available on campus at 40 percent off.

Another Ann Arbor dealer, InneComp, won a bid to service the Macs sold through the university. Marks says that the dealership believes it will make money on peripherals for the Mac and doesn't see the AUC as a threat.

> "We've established the plan and we know the approach. What we don't know is where it will take us."

According to Bill Shipp of Brown University, local dealers report that peripheral and software sales are up in Providence. Across the country in Palo Alto, California, another dealer reports the same trend. "The AUC won't represent enough units to affect us," says Ed MacBeth, manager of Mission Computer near Stanford. He says it has actually stimulated business. The store has already taken thirty to forty orders for Macs and is already selling Imagewriters to students.

"Apple needed to do it to remain competitive and get support for the Macintosh," says MacBeth. Carrying four other brands besides Apple, he feels that the store's stock is "well spread out" enough to absorb any one decision by one company.

Complete Computer's John Fitzgerald believes Apple is on target with its projection of the Mac as a student and small business machine. "The Mac would have to be thought of as a workstation to Lisa for big business sales," he says. "There aren't enough peripherals yet to be serious about it in an office environment."

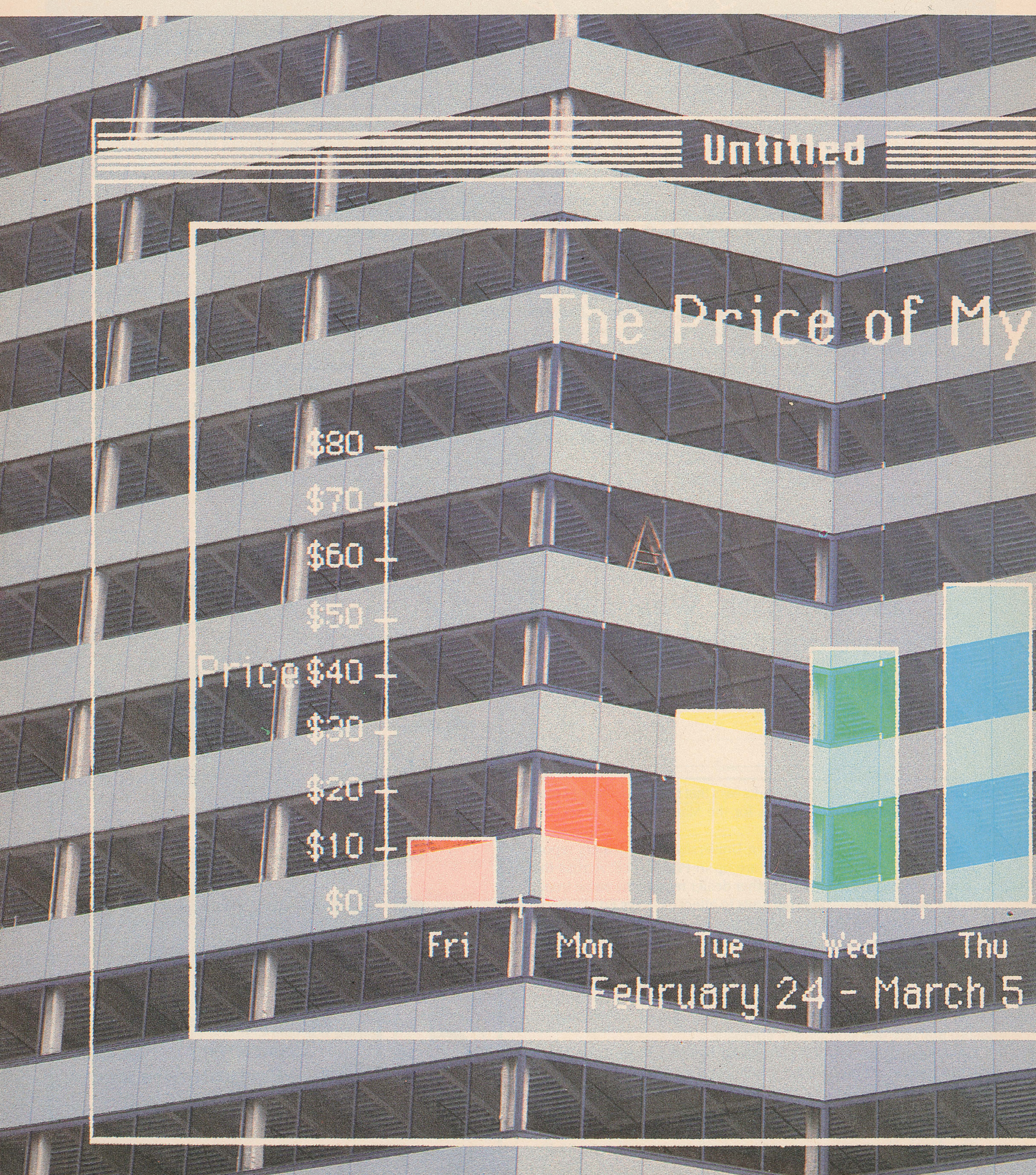
The Mac's "human-factors engineering," or ease of use, as the *Chronicle* translates it, was a big determining factor in its acceptance on the college level. "The definitive reason we chose it is that the provost looked at it and said, 'The humanities division would get excited about that machine,'" said William Y. Arms, vice provost for computing and planning at Dartmouth. Faculty members at the school resisted personal computers in the past, the paper reported, because they weren't as easy to use as the school's time-sharing system. The Mac is "easy and more fun," Arms added.

All Tomorrow's Parties

The AUC is now six to seven months into its three-year life span. Apple is only now beginning to wrap arms around the program, according to Lewin. Both the problems and the promise of the agreement are only starting to emerge. The next eight to twelve months will tell, as Apple readies itself for incoming feedback from the consortium schools. "We have established the plan and we know our approach," Lewin says. "What we don't know is where it will take us. We're learning as we go."

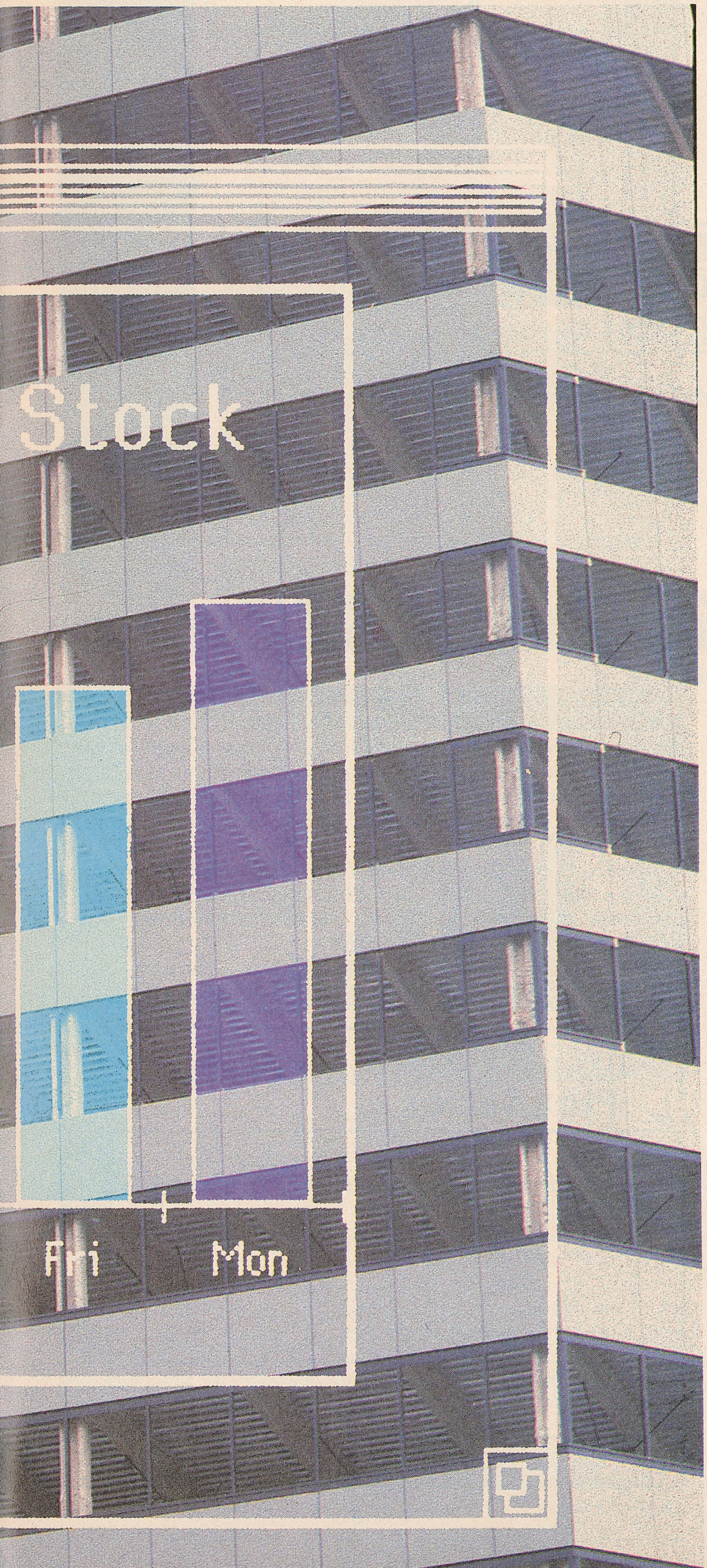
The prediction of a nationwide black market in Macintoshes appears to have some validity—there may be too many buyers involved to ensure the "moral commitment" desired by Apple. On the other hand, the opportunities for software development on the Mac look to be significant by the same standards. No one can say just what the universities will be able to do, given the incentive of the AUC. One thing is certain, however: The Mac will certainly have a chance to earn its place at the university level.

By STEVE LAMBERT



ART FOR BUSINESS' SAKE

A Review of Microsoft CHART



The Apple Macintosh is, purely and simply, a graphics machine. It is designed to remove the stigma of computer illiteracy by encouraging applications programs that can be used intuitively. If the Macintosh did nothing more than produce charts and pictures, it would still be a revolutionary piece of equipment. The fact that it integrates other programs into its graphics environment is frosting on the cake (or perhaps crust on the apple pie).

There will undoubtedly be many charting programs developed to take advantage of the Macintosh's fantastic graphic capabilities; Microsoft's *Chart* is the first, and will probably become the yardstick against which the speed, power, and ease of operation of all others are judged.

Charts are created and used by people with various degrees of business and computer knowledge. Microsoft has produced a program that should appeal to people at all levels: It is fast, flexible, and easy to use.

Charts are used for two basic purposes: to help discover a relationship between numbers or groups of numbers, and to share the discovery with others. Within each purpose there is a range of specific applications and styles. To be truly useful, a charting program should address both these purposes; it should allow you to rapidly enter and plot a list of numbers for evaluation, try out different display formats for maximum effectiveness, and polish the results for presentation.

Microsoft's *Chart* takes full advantage of the speed and ease of operation of the Macintosh in allowing you to rapidly enter information, display it as a chart, modify and enhance the chart, and print the finished product.

A great deal of specific information is required to create a chart. If you had to enter all this information for each chart created, you would spend most of your time typing—or clicking hundreds of different choices in a maze of menus. *Chart* streamlines the process by providing a set of properties sheets for every chart you create. Each properties sheet stores information about a particular aspect of the chart—a piece of text, an axis, the pattern of a bar, and so on. Many of the entries on these properties sheets are optional; they define enhancements to the chart that are not required for its creation. The entries that are required to create a chart are automatically filled in by *Chart* with information it considers reasonable based on the circumstances. You are free to change any of this information or enter any of the optional information; but to create a chart you are not required to enter anything other than numbers.

The program further streamlines the process by permanently predefining forty-two variations of six standard chart formats—area, bar, column, line, pie, and scatter. Once you have entered some numbers, you can display them in one of these formats by browsing through a gallery of icons and clicking the one most closely resembling the chart you want. You can make as many trips to the gallery as you like, displaying your information in one format after another until you are satisfied with its appearance.

At any point in this graphic odyssey you can leave the predefined charts of the gallery and edit one or more of the properties sheets attached to the currently displayed chart, to fine-tune it to your needs.

The properties sheets that define a chart are saved along with

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Steve Lambert is the author of Presentation Graphics on the Apple Macintosh, *to be published by Microsoft Press.*

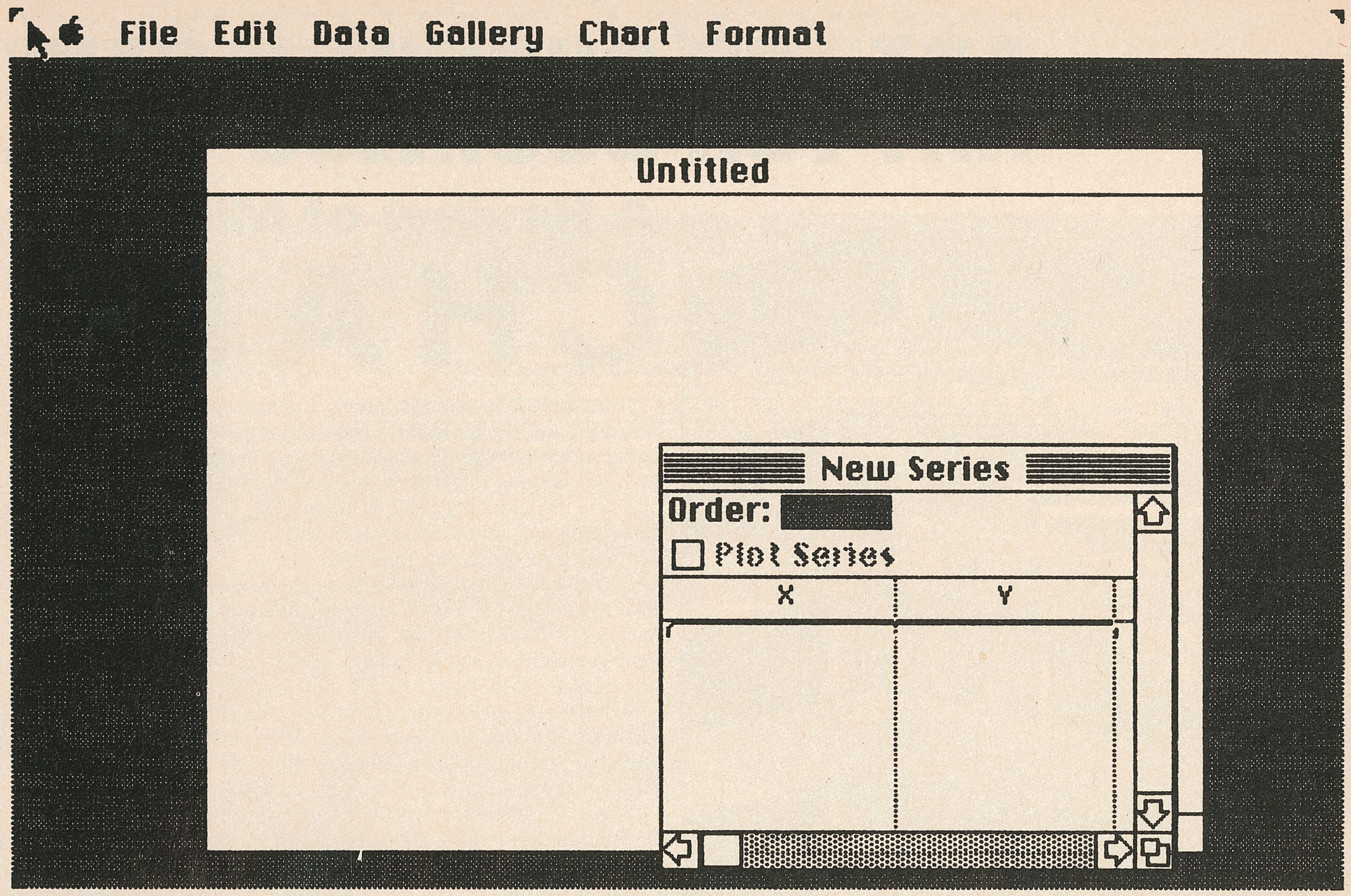


Figure 1.

each chart and can later be retrieved, either with the data or separately, and used to plot different numbers in the same format.

What's Lacking?

Microsoft *Chart* for the Macintosh probably packs more power for the price than any other charting program on the market. The most obvious limitations of the program are the limitations inherent in the current configuration of the Macintosh, and therefore can be expected to be resolved by the passage of time. Increasing the RAM to 512K (a few Fat Macs do exist, and they are indeed amazing) would speed up an already fast operation. A second drive would make the storage of data files fast and easy. Double-sided drives would allow more application programs to be stored on a disk, and therefore allow a more fluid transfer of information between applications. Drivers for plotters would certainly be nice.

Are there any problems with *Chart*? While writing a book about presentation graphics on the Macintosh, I created more than a thousand charts with this program, and I certainly can't claim there was never a problem or a frustrating moment. However, the program was under development during this time, and since I live twelve minutes from Microsoft, I took my problems directly to the programmers. Each problem I discovered was immediately solved.

Now we'll turn control of the *Chart* program over to you; follow the directions and we'll create and modify a simple chart.

When the *Chart* icon is opened from the Macintosh desktop, a desktop similar to Macintosh's own is displayed (figure 1).

There are a few more items in the menu bar and two permanently open windows, but a quick tour of this desktop reveals no surprises for anybody familiar with other Macintosh applications such as *MacWrite*, *MacPaint*, and *Multiplan*.

To create a chart, you need only enter a set of numbers, called *data points*, into a series and then instruct the program to plot the series. When the program starts, the New Series window is selected and standing by to accept numbers. Type the numbers *12, 23, 34, 45, 56, 67, 78* and press the Enter key after typing each number. The disk drive hums and things start happening in the vicinity of the New Series window. Another series window appears, titled with its time of creation. The numbers you type are listed in the right column, opposite a sequence of numbers assigned by *Chart* in the left column (figure 2).

The two columns labeled X and Y hold the numbers to be plotted on the X and Y axes of the chart. The set of numbers (X,Y) on any line make up one data point, which is the X,Y coordinate of one plotted point on the chart.

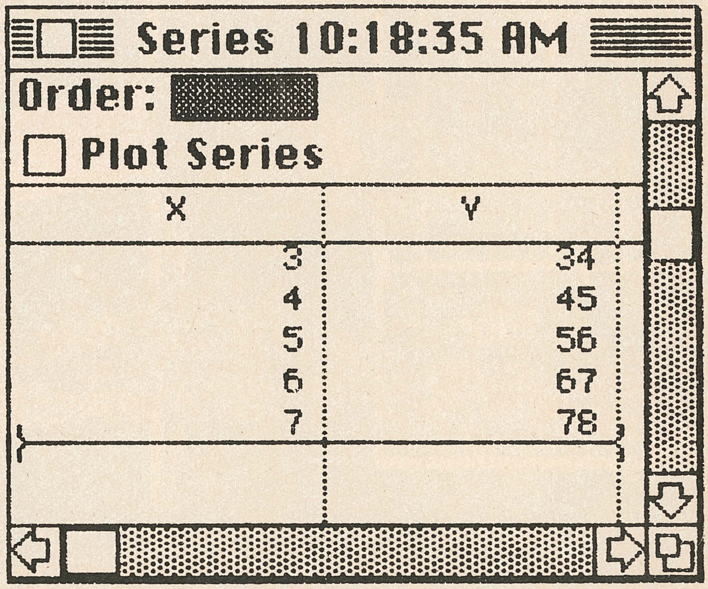


Figure 2.

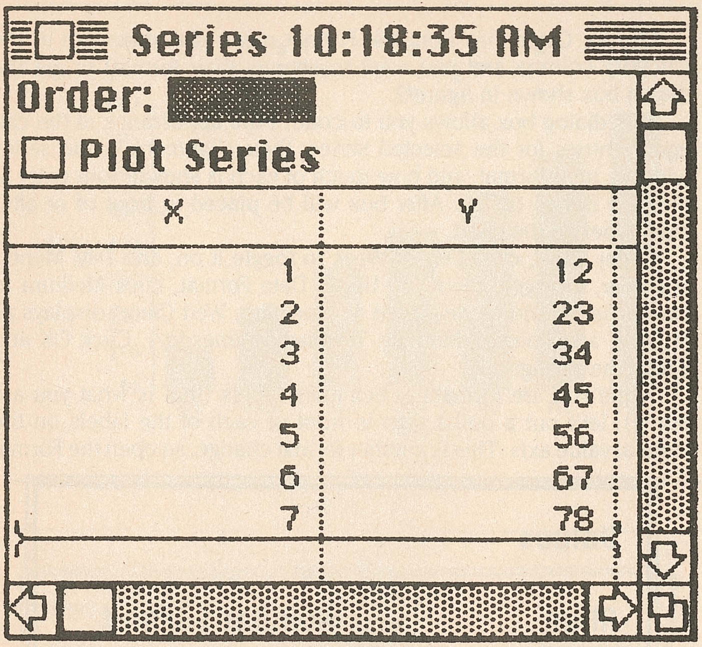


Figure 3.

The series window displays only the last six data points entered—the rest scroll off the top of the columns. To review the entries, you can drag the scroll box in the bar at the right side of the window or enlarge the window by moving it up and then dragging the size box in its lower right corner (figure 3).

To plot the series, click Plot Series in the series window. There's some more humming, an X appears in the click box beside Plot Series to indicate this series is plotted, the number 1 appears in the Order

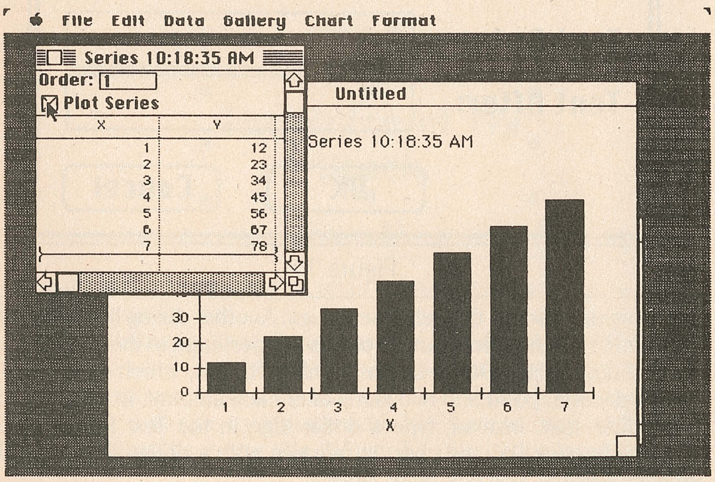


Figure 4.

box to show that this is the first series plotted on this chart, and the chart appears in the chart window, behind the series window (figure 4).

The program made some decisions for you when you started entering numbers and some more decisions when you clicked Plot Series. The most important were the series type and the chart type. The series type determines the kind of information in the left column of the series window. There are four types available—Sequence, Date, Text, and Number. If you don't specify one of the four, by choosing it from the Data menu, *Chart* selects Sequence (which accounts for the automatically supplied sequence of numbers in the left column of your series window).

There are six basic chart types available—Area, Bar, Column, Line, Pie, and Scatter. If you don't specify one of the six, by choosing it from the Gallery menu, *Chart* selects Column. Let's change both the series and chart type.

Figure 5.

Change the series type to Date by choosing Date from the Data menu (figure 5). A Date series is one in which the values, listed in the right column of the series window, are measured at equal time intervals. Because the intervals are equal, you can provide the starting date of the series and the interval between dates, and *Chart* will supply the dates in the left column of the series window.

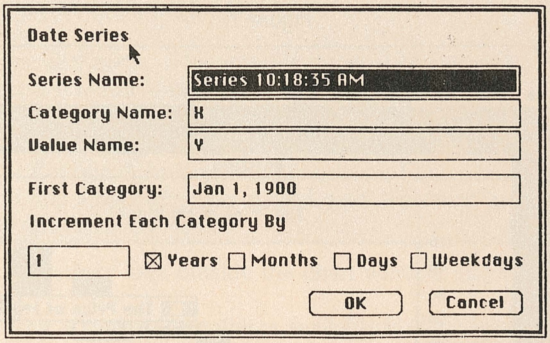


Figure 6.

When you choose Date, a Date Series properties sheet appears on the desktop (figure 6).

This properties sheet holds the series name and the names assigned to the two columns (Category and Value) in the series window; these names are presently the creation time of the series (10:18:35 AM) and X and Y.

The names you assign on the series properties sheet also appear in the series window and, if this is the first series plotted (if it has the number 1 in the Order box), on the chart.

So let's say that the company you created to provide inexpensive, but very useful, accessories for the Apple Macintosh has just gone public, and the numbers we plotted on our chart represent the rapidly increasing price of your stock on seven consecutive weekdays (Monday through Friday). You would like the chart to be a little more explicit. To change the Series Name, which is already selected (highlighted), to The Price of My Stock, simply type the new name. If you want to replace text that is not selected, you must first select it either by dragging the pointer through it or by pressing the Tab key until the highlight moves to it. Press the Tab key to select the Category Name, and replace it with Day. Replace the Value Name with Price.

The properties sheets for all four series types allow you to assign names. The Sequence and Date series, which automatically provide entries in the category column of the series window, also allow you to control how they compute the entries provided. Your First Category entry sets the starting point, and Increment sets the space between entries. Your entries are weekdays, starting on February 24; so enter February 24, 1984 (or Feb 24, 1984, or 2/24/84), as the First Category, leave the entry of 1 as the Increment, and click Weekdays. Your Date Series properties sheet should now look like figure 7.

Click the OK button on the properties sheet to put your changes into effect. The disk drive hums a bit and your chart and series window are redrawn with new titles, labels, and entries. If you scroll through the entries in the Day column of your series window, you will see that *Chart* has computed the dates for the weekdays from 2/24 through 3/5—skipping over weekends and remembering that this is a leap year.

The month/day/year date format displayed in the series window and on the chart in the background (figure 8) is not quite what you want in the way of labels—Mon, Tue, Wed, and so on, would be more appropriate. Like everything else in *Chart*, labels are easily changed.

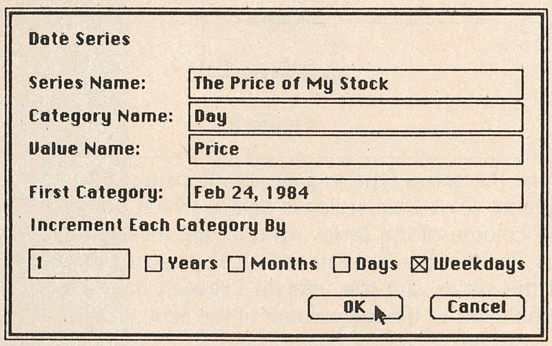


Figure 7.

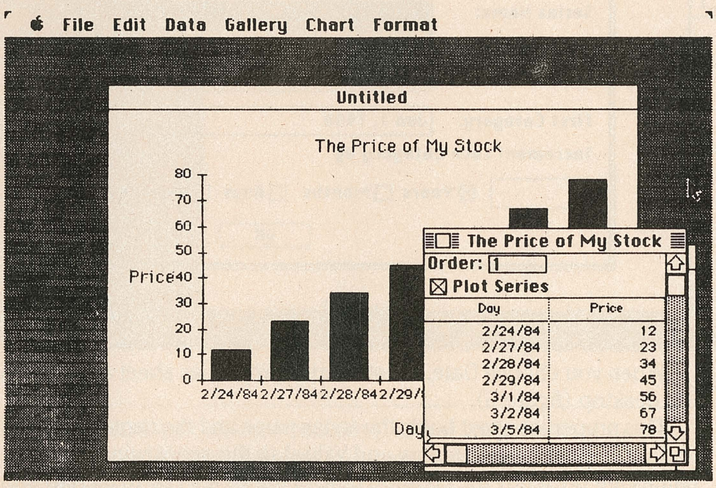


Figure 8.

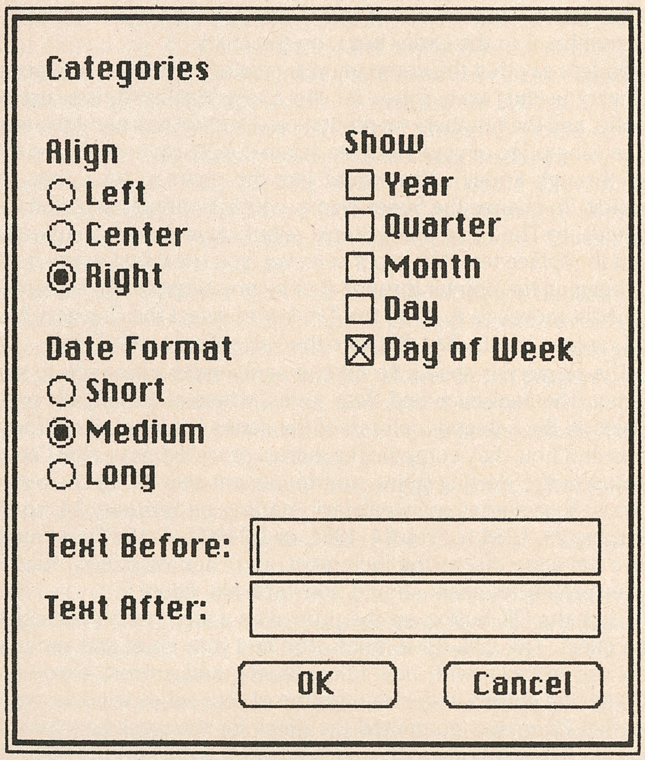


Figure 9.

Choose Categories from the Format menu (the dates are in the category column and you want to change their format) to get the dialog box shown in figure 9.

This dialog box allows you to control the appearance of the category entries for the selected series: their alignment in the series window, their format, and how much of each is shown. Your entry in the Text Before or Text After box will be placed in front of or after each label on the chart.

Under Show, click Day of Week to toggle it on, and Day, Month, and Year, to toggle them off. Under Date Format, click Medium to cause the days to be displayed as Mon, Tue, Wed (Short displays as M, T, W and Long as Monday, Tuesday, Wednesday). Click OK and watch the changes.

While you are formatting tick-mark labels (that is what you are doing), let's put a dollar sign in front of each of the labels on the vertical value axis. This is another format change, so open the Format menu again; but this time choose Values. Another dialog box appears (figure 10) in which you can set properties pertinent to the value axis.

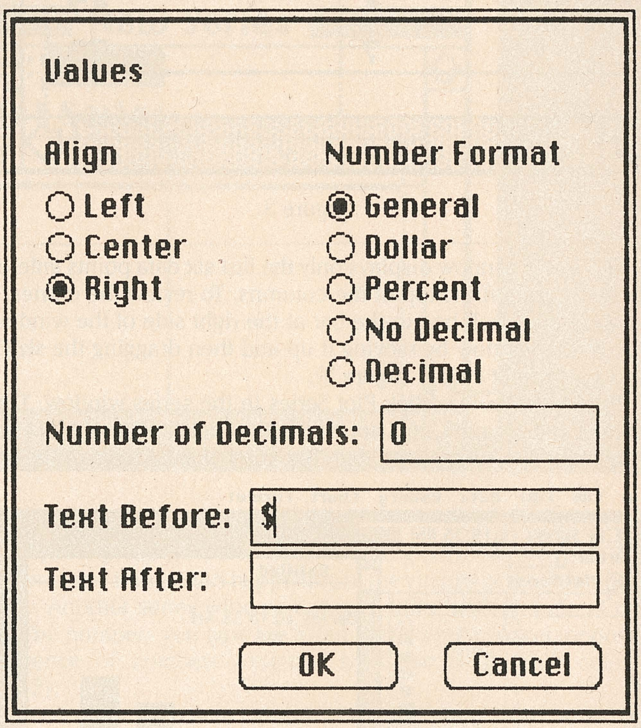


Figure 10.

You could click Dollar under Number Format, which would provide a decimal point and two zeros after each amount, in addition to the dollar sign. Instead, type a dollar sign in the Text Before box. When you click OK, the chart is redrawn with a dollar sign in front of each vertical axis tick-mark label.

Let's do a little work in the chart window. As with other Macintosh applications, only one window can be selected at a time, and this is currently your series window: Click anyplace in the chart window to select it and bring it to the front.

First we will emphasize the title, The Price of My Stock, by making it larger and bolder. Click the title; it is surrounded by small black squares (called handles) to indicate it is selected (figure 11).

Choose Text from the Format menu, and click Large and Bold in the properties sheet that appears (figure 12).

Click OK and the chart is redrawn with the title in a large, bold font—on two lines (figure 13). Text displayed on the chart must stay within the boundaries of the black selection handles; in this case the text was formed into two lines to fit.

To change the appearance of the text, just change the shape of the selection space by dragging one of its handles. When you release the mouse button after dragging a handle, the chart is redrawn with the text conforming to the new selection area. You can move text you have selected by placing the pointer between any two selection han-

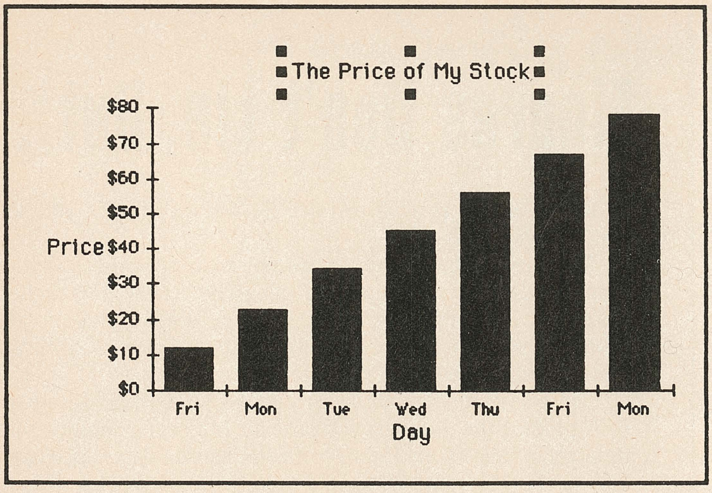


Figure 11.

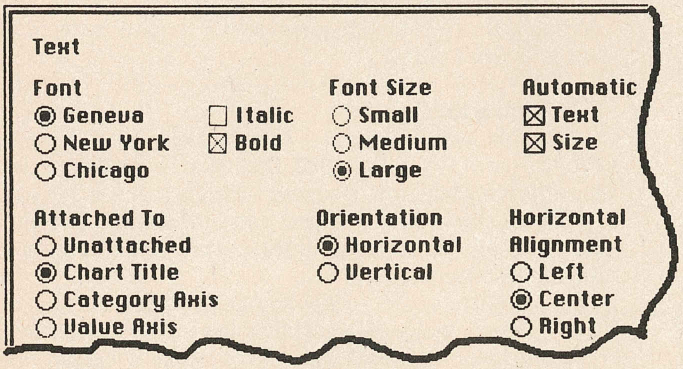


Figure 12.

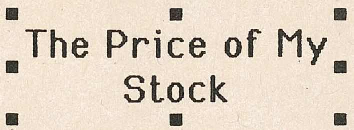


Figure 13.

dles; the pointer changes to a set of arrows pointing in the directions you can move the text.

Next let's change the category axis title, Day, to February 24–March 5. Click the word Day; the selection handles disappear from the chart title and reappear around the axis title. Drag through Day, to select it for editing, and type its replacement. You have to drag the handles out to display the entire title. When the title is displayed properly, click in the empty area outside the chart window and the handles disappear.

Let's have a look at the patterns available for the filled-in areas of the chart: bars, columns, and so on. You could click a specific column and then choose Patterns from the Format menu and alter its pattern, but let's take the easy way and simply pick a format from the Column Chart Gallery that displays columns in a variety of patterns.

Choose Column from the Gallery menu, and you are presented with eight little charts to choose from (figure 14). You may have to pass through the program a few times before you are aware of the attributes indicated by each of these diminutive charts; but since plotting your points in one of these styles requires no more than a quick click, learning is easy.

Click number 2, which shows a distribution of patterns among the columns of a single series, and click OK to return to the desktop and a new chart with a different pattern in each column (figure 15).

Your multipatterned chart is beginning to look a little gaudy. Let's frame and print it so you can send it to your brother-in-law—who didn't believe in your product and refused to buy stock at a dollar a share.

To frame your chart, first select it (choose Select Chart from the Chart menu) and then choose Patterns from the Format menu. When you select the chart, it is surrounded by black handles, indicating you can move it, change its size, or apply some other command to

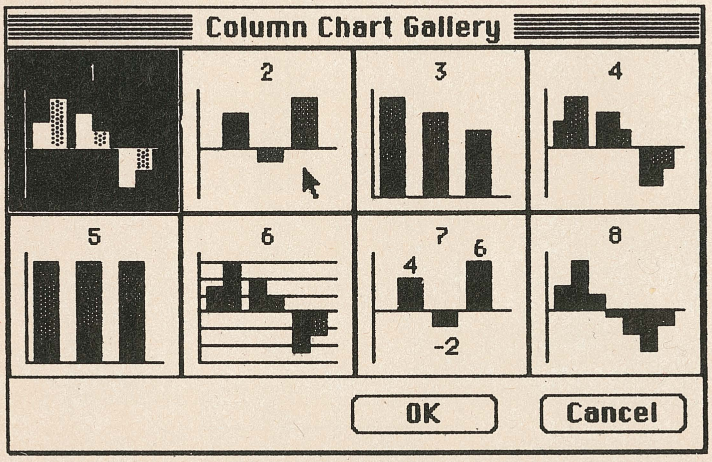


Figure 14.

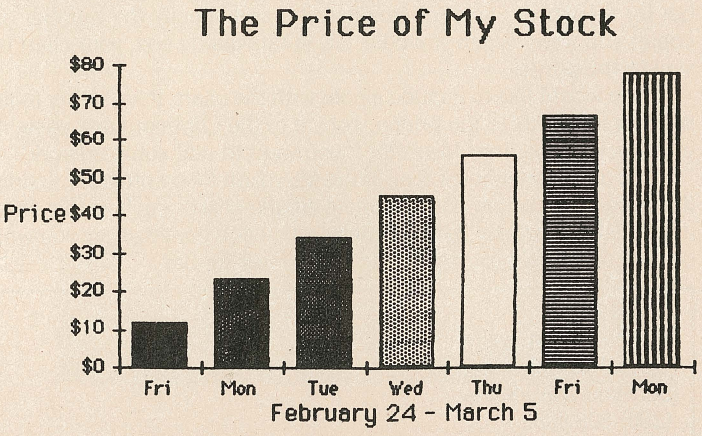


Figure 15.

SPECS

Chart formats available: six basic formats, unlimited variations
Maximum data points per series: 63
Maximum series per chart: 20–40 depending on available memory
Maximum data points per chart: about 400
Text fonts: three
Text variations: two; bold and italic
Text sizes: three
Legend (key): manual or automatic
Frame styles: five; frames can be applied to the chart, the plot area, the legend, and individual text on the chart
Area patterns (bars, columns, and so on): 15
Line weights: three, plus pattern variations
Marker patterns: nine
Labels and titles: manual or automatic; unlimited variety
Math functions: nine plus link to *Multiplan*
Sorting: yes
Scaling: arithmetic or logarithmic; manual or automatic
Disk space required to store one chart: 3–6K
Integration with other applications: *Chart* files can be linked to *Multiplan* files and can accept text and numeric information, via the Clipboard, from other applications. Charts can be copied to the Clipboard and pasted into *MacPaint* and other applications.

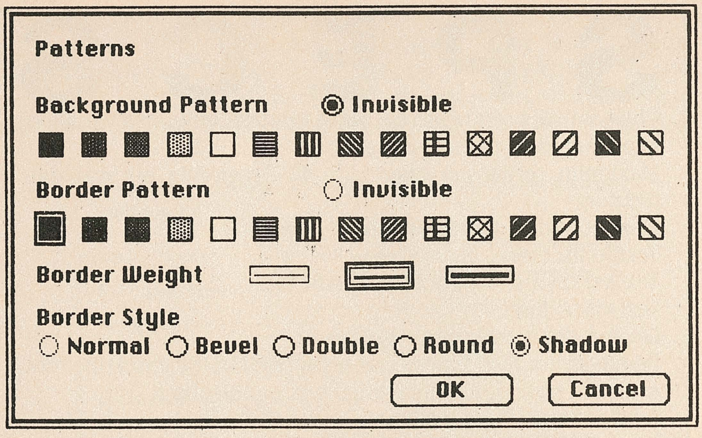


Figure 16.

it. Choosing Patterns presents you with the dialog box in figure 16, where you can set the background and border patterns, as well as the border weight and style.

Click the black border pattern, the medium weight, the shadow

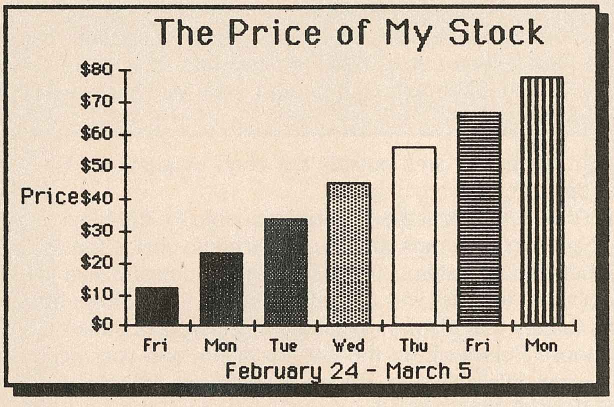


Figure 17.

style, and OK. Your chart is redrawn as in figure 17, framed and ready to print.

Printing can be done in one or more stages. By choosing Page Setup from the File menu, you can specify the size of the paper in your printer and the orientation you would like the chart printed—up and down or sideways. You can also add a comment at the top and bottom (a header and a footer) and set the margins. Controlling the margins allows you to control the size of the printed chart; the chart on the Macintosh screen is scaled up or down to fit the space available within the margins of the paper it is printed on.

If you don't want to change any of the preset selections in the Page Setup dialog box, you can skip this stage and go on to the Print dialog box, also available from the File menu. In this dialog box you can opt for a High or Standard Quality print and specify the number of copies you want. When you click OK in this dialog box, your chart is sent to the printer.

If you would like to include a note with the chart, then, rather than sending it directly to the printer, copy it to the Clipboard and paste it into *MacWrite* (or into *MacPaint* if you want to add some artwork).

This has been a quick tour of the Microsoft *Chart* program. Using this program, you can quickly create simple charts, such as this one, in a variety of formats. With a little practice and imagination, you will be able to create exotic charts in almost any format.

Chart
Microsoft Corporation
10700 Northup Way
Bellevue, WA 98004
(206) 828-8080
$125

Figures Don't Lie, But...

What you see is what you get, but what you think you see isn't always what's there.

The reason charts and graphs are such powerful forms of communication is that people generally follow established standards when creating them. Because these standards are followed, you can glance at a chart and make quick assumptions about the message it is attempting to convey.

Chart takes these standards into account when automatically plotting the numbers you provide, but occasionally, either through a lack of familiarity with the standards or in a conscious effort to mislead, people modify the automatically generated charts in a manner that distorts the truth.

The following charts are presented not to show you how to mislead others with creative charting, but to help you recognize charting techniques that require careful scrutiny to determine their true significance.

Changing the Axes

The table shown in figure 1 lists the Consumer Price Index of Food from 1967 through 1982. Each of the charts that follows plots this information in a slightly different manner.

Figure 2 shows a fairly honest portrayal of the CPI's steadily upward climb. The axes are in reasonable proportion to each other and scaled properly.

Simply pushing in the right side of the chart converts it to figure 3, which indicates a slightly more dramatic increase.

Figure 4 returns to the original proportion, but changes the scale on the value axis; the maximum of 500 makes the change in CPI from 100 to 285 seem slightly less significant.

Often a totally new approach to a set of numbers is used to lend a different look to the chart. Figure 5 demonstrates this by plotting the rate of change of the CPI that was plotted in the previous charts.

If the category plotted fluctuates within a narrow range, people who are trying to stress change will often alter the scale of the value axis to barely bracket the fluctuation. The two charts in figure 6 show the number of labor strikes in the 1970s—one with a normal axis scale, the other with the maximum and minimum axis values brought closer together.

When an area chart is used to plot multiple series, the order of the bands, from bottom to top, affects your impression of the amount of change within each band. Figure 7 shows what happens if you move a band displaying little change from below to above a band displaying considerable change.

Year	CPI
67	100
68	103
69	107
70	114
71	120
72	130
73	140
74	161
75	175
76	180
77	192
78	211
79	234
80	254
81	274
82	285

Figure 1. CPI of food.

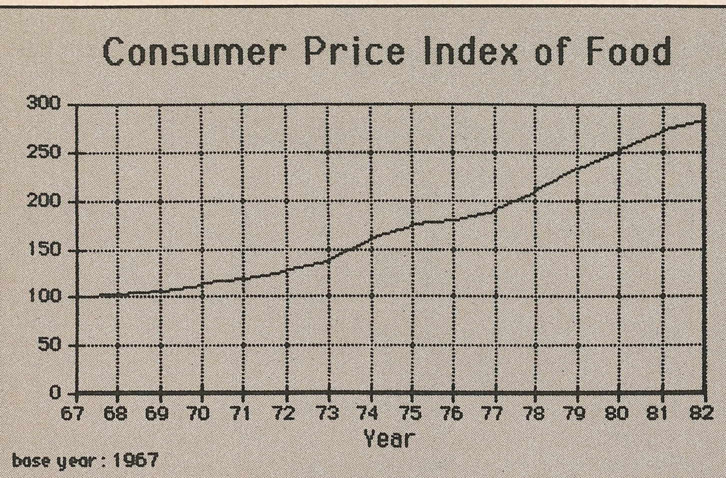


Figure 2. Basic chart of CPI.

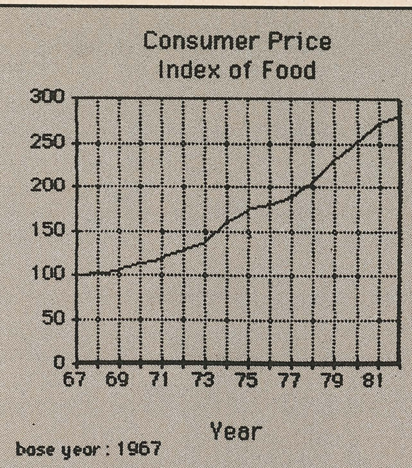


Figure 3. Changing the scale proportion.

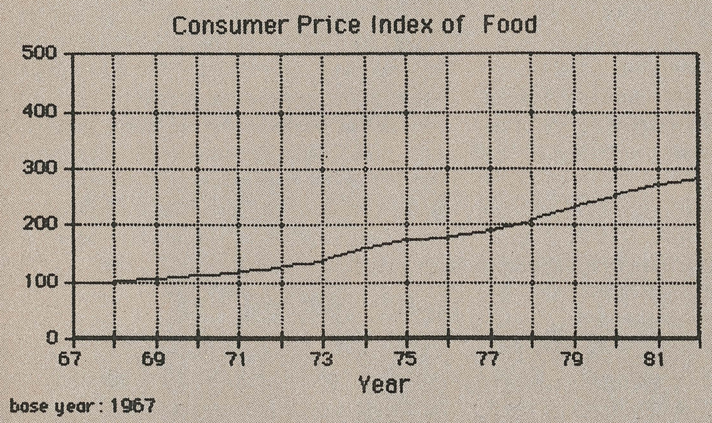


Figure 4. Changing the value scale.

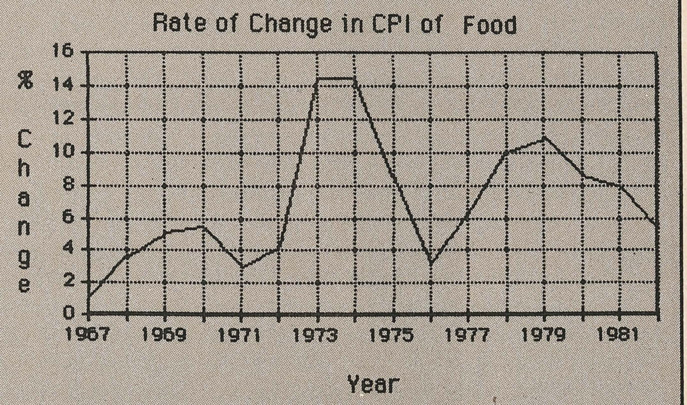


Figure 5. Rate of change in CPI of food.

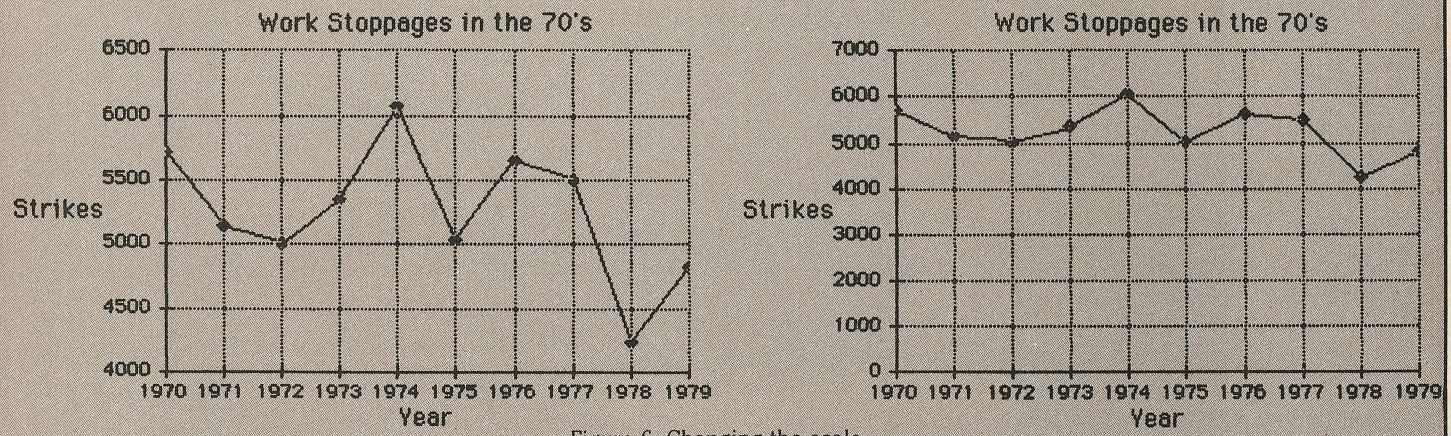


Figure 6. Changing the scale.

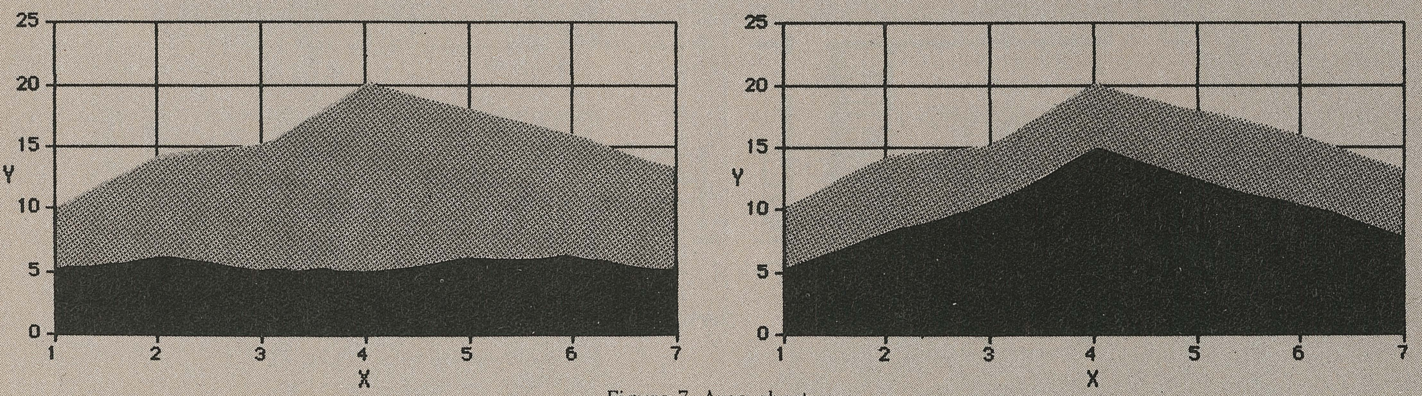


Figure 7. Area charts.

Clicks & Pointers

A Disk by Any Other Name

Ever boot up your *Write* or *Paint* disk only to find its name changed to *mnbvmm+*? Or *111111111*? What's happened is that you've been leaning on the keyboard as the disk was booting. Even though the Mac was busy, it was paying attention to your accidental keystrokes, waiting for an opportunity to use them. Usually, this is a good feature for a computer to have; it means you can type in a command while the computer is still working on the last thing you told it to do. When you boot a disk, however, it comes up with the icon for that disk selected. When an icon is selected, you can rename it just by typing a new name. That's how disks can be accidentally renamed. If you hit even one key while the disk is booting, the Mac thinks you were trying to rename the disk.

Fortunately, there's a way to get the old name back even if you've forgotten it. The Mac won't write the new name to the disk until you click something else with the mouse, thus deselecting the disk icon and telling the Mac you're finished typing in the new name.

What you can do, if you haven't yet clicked someplace else, is backspace over the name you just accidentally typed and type the name of a file you already know is on the disk. *Finder* and *System* are usually safe bets if the disk booted. Then, when you click someplace else, the Mac will try to rename your disk and it will find that the name you typed has already been used. It will give you an error message in a dialog box, look at the disk to see what it was named originally, and give it that name.

This trick also works with any file you have accidentally renamed, although it seems to be necessary most often with the name of the whole disk.

Lisa's Junk Box

One of the advantages of mainframe computers is that they have a lot of memory. So much, in fact, that they usually don't actually erase a file when you tell them to; they just remove it from the list of available files. If you find, after having deleted a file, that you want it back, you can usually get it just by asking for a list of deleted files.

The Lisa's operating system offers you the luxury of retrieving only the last file you threw into the wastebasket. Unless you're really pushing the storage limits of the hard disk, however, you can do better than this.

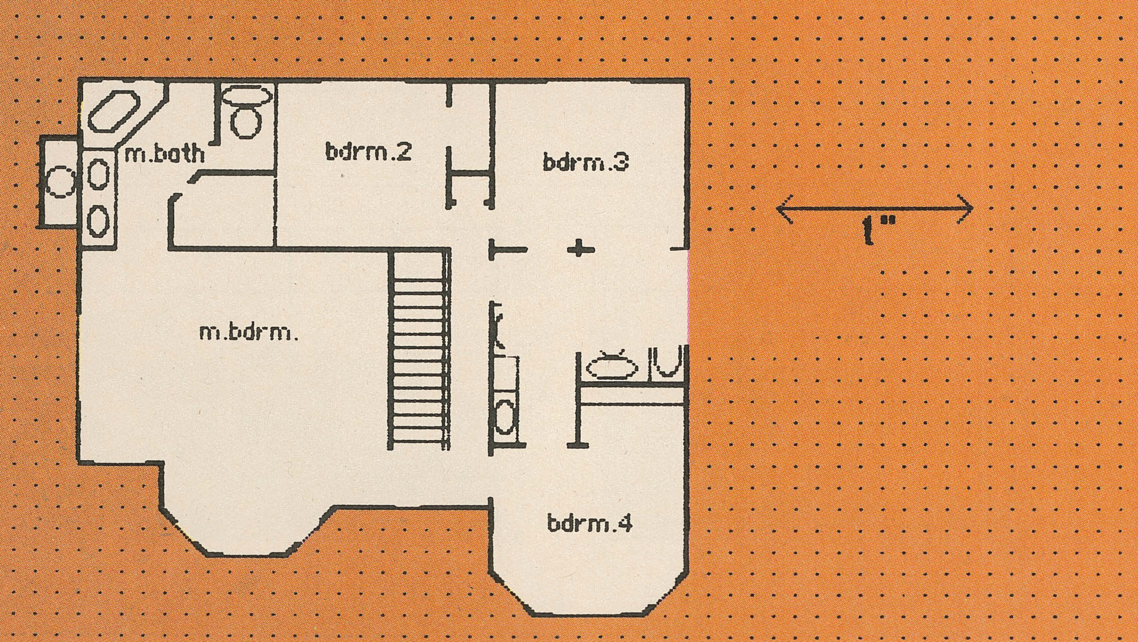
Duplicate the empty folder in the hard disk window and rename the copy Junk Box. As you work throughout the day, throw old files into the Junk Box folder instead of into the wastebasket. It works the same way: Move the icon for the file to be thrown out over the icon for the Junk Box until the Junk Box is highlighted; then release the button. The file is out of your way, but still accessible if you change your mind. To get a deleted file back, just open the Junk Box and move the file into the hard disk window or onto the desktop.

At the end of the day, or when you really need disk space, you can select the entire contents of the Junk Box and throw everything away. Or you can just throw the Junk Box folder away—its contents will go with it—and make a new Junk Box later.

Creating a MacPaint "Grid"

One of the handiest features of *LisaDraw* that's missing in *MacPaint* is the optional grid and rulers that allow you to position something precisely on the page or compare dimensions of objects on-screen.

You can create a makeshift "grid" in *MacPaint* by selecting portions of the screen and filling them with the *MacPaint* pattern that has the fewest number of dots in it. This pattern has about nine pixels per inch. Of course, you'll have to erase the dots when you're through drawing—a chore that'll go a lot quicker if you select huge chunks of dots with the lasso or selection rectangle and press the backspace key to delete.



A Capital Idea

Looking for a way to dress up your manuscripts? You might try beginning the first paragraph with an oversized capital letter like many books and magazines do. First, you'll have to create the initial cap and the first several lines of text as a *MacPaint* document. Select the text option and type the initial (not too close to the top of the window), then play around with fonts, sizes, and styles until you've found a look you like. Remember that any outlined letter can be filled in with the pattern of your choice by using the paint bucket.

When you have the text and initial just the way you want them, lasso both, choose Copy from the Edit menu (which puts a copy of the document on the Clipboard), and open a *MacWrite* file, where you'll finish the document. Position the flashing insertion bar where you want the initial and text to appear in the *MacWrite* window and choose Paste from the Edit menu. When your selection reappears, continue typing until you've finished your document.

Of course, you should have already decided on a typestyle and page format by this time, as you can't change the specs on the initial cap and text without going back to *MacPaint*. When you print your document, make sure to choose Standard rather than High quality; when printing in High quality, *MacWrite* gets a typeface from the System file that's twice the point size of the font specified and "shrinks" it to the specified point size to create a higher-resolution character. If you choose High quality print, the text typed in *MacWrite* will be bolder than the text typed in *MacPaint*.

The samples shown here illustrate just some of the ways you can use initial caps to add a nice touch to your work.

Do you have a Macintosh or Lisa tip to share with other readers? If so, send it to Clicks & Pointers, Box 7041, North Hollywood, CA 91605. Contributors will be credited in the magazine.

There's a surprise hidden in every MacPaint disk. To find it, select the "A" box and then choose the New York typestyle from the Font menu. Click to set an insertion point and then press the Option, Shift, and ~keys at the same time. Now experiment with all the typestyles and sizes!

The revolution arrived, improbably enough, a month ago in a box from Knoxville, Tennessee.

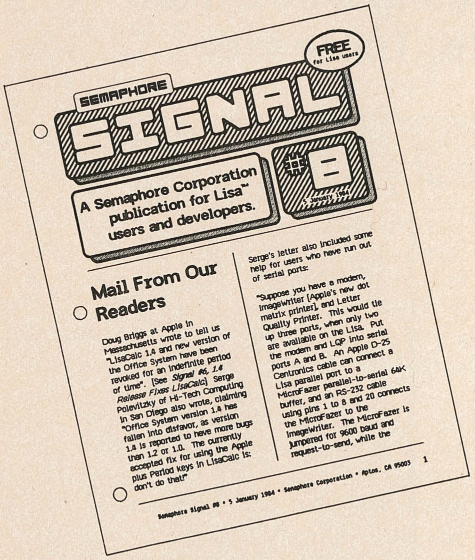
In 1964, as today, we loved automobiles and the music of the English language. Tom Wolfe was just hitting his stride at the

Although we cannot feel it, Earth is moving rapidly through space. Our planet's mean orbital velocity--the

Lovers of the traditional American luxury car are hereby allowed a sigh of relief.

Mac and Lisa Newsletter

The *Semaphore Signal* is a free newsletter published for owners of Macintosh and Lisa computers. It is created, edited, and printed entirely on a Lisa. United States subscriptions are free to users who submit the serial number of their Macintosh or Lisa. Other readers may subscribe for $10 (ten issues) in North America, $20 elsewhere. *Semaphore Signal*, 207 Granada Drive, Aptos, CA 95003; (408) 688-9200.


FREE for Lisa users

SEMAPHORE SIGNAL

A Semaphore Corporation publication for Lisa™ users and developers.

#8 5 January 1984

Mail From Our Readers

Doug Briggs at Apple in Massachusetts wrote to tell us "LisaCalc 1.4 and new version of the Office System have been revoked for an indefinite period of time". [See *Signal #6, 1.4 Release Fixes LisaCalc*] Serge Polevitzky of Hi-Tech Computing in San Diego also wrote, claiming "Office System version 1.4 has fallen into disfavor, as version 1.4 is reported to have more bugs than 1.2 or 1.0. The currently accepted fix for using the Apple plus Period keys in LisaCalc is: don't do that!"

Serge's letter also included some help for users who have run out of serial ports:

"Suppose you have a modem, ImageWriter [Apple's new dot matrix printer], and Letter Quality Printer. This would tie up three ports, when only two are available on the Lisa. Put the modem and LQP into serial ports A and B. An Apple D-25 Centronics cable can connect a Lisa parallel port to a MicroFazer parallel-to-serial 64K buffer, and an RS-232 cable using pins 1 to 8 and 20 connects the MicroFazer to the ImageWriter. The MicroFazer is jumpered for 9600 baud and request-to-send, while the

Semaphore Signal #8 • 5 January 1984 • Semaphore Corporation • Aptos, CA 95003 1

Unify Database

The *Unify* relational database management system is now being marketed by the software publisher of the same name. *Unify* is a general-purpose database that runs under Unix for the Lisa. The program features application-development tools; programming-language interfaces for Sequel 2, C, and RM/Cobol; forms generation for data query; query-by-form; report generation; and security features. Estimated price: $1,495. Unify Corporation, 9570 Southwest Barbur Boulevard, Portland, OR 97219; (503) 245-6585.

Santa Cruz Xenix Software

The Santa Cruz Operation is releasing a fleet of programs that run under the Xenix operating system. It includes an operating system kernel, features more than 100 utility programs, and is multitasking and multiuser for a Lisa with several Macintoshes connected and acting as dumb terminals. The operating system is the basic building block required to operate two other Santa Cruz programs: the *Xenix Text Processor* and the *Xenix Software Development System*. The *Xenix Text Processor* contains text formatters for letter-quality, dot-matrix, and line printers, as well as for phototypesetters. It also includes formatters for mathematical equations and tables, a screen-oriented text editor, a spelling checker, and other text processing utilities. The *Xenix Software Development System* includes a C compiler (the language in which most Xenix software is written), the Linker, a screen-oriented text editor, a source code control system, C libraries, and other utilities useful for software development. Xenix operating system, $795; *Xenix Text Processor*, $495; *Xenix Software Development System*, $595. All three programs, $1,495.

Informix is a relational database management system that gives great leeway in allowing the user to structure and query data. It features a flexible query language and a comprehensive report writer that can access and merge standard Xenix files into reports. The program also has a query-by-forms facility that lets the user create custom forms for data entry or inquiry. $795.

Uniplex is Santa Cruz's menu-driven word processor that provides fully user-configurable menus, commands, and messages. It takes full advantage of flexible user interfaces and can also operate with any ASCII terminal. *Uniplex* has a built-in spelling checker and file-merge capability. The screen display shows exactly what will be printed. $595.

Multiplan is another of Santa Cruz's offerings for Lisas operating under Xenix. The popular program can link together multiple worksheets so that updated values can be transferred between them. A user can open up to eight windows on-screen in order to monitor the effects of value changes. The program also has special formatting and printing options for user-customizable reports. $495. The Santa Cruz Operation, 500 Chestnut Street, Santa Cruz, CA 95060; (408) 425-7222.

MacPak, PrintPak, MacSak, and MacCover

MacPak is a versatile Macintosh carrying case that comes in black, navy blue, and silver and allows you to tote the computer over your shoulder with the shoulder strap, carry it as a suitcase with the handle, or carry it on your back like a backpack. $79. PrintPak allows the Imagewriter printer to be carried separately as a suitcase or toted as an attachment to the MacPak. $44. Both products have a Cordura nylon exterior and an inner lining of Ethafoam, a shock-absorbing material. MacSak is a less expensive version of MacPak that comes without the Ethafoam interior. $44. MacCover is a vinyl dust cover that is available in brown and black. $26. MacPack Systems, Box 3928, Kent, WA 98032; (206) 839-0432.

Macintosh Carrying Case

The Macintosh Carrying Case is made of water-resistant nylon and has individual pockets to hold all Macintosh components. The case also has both hand and shoulder straps. $99. Apple Computer, 20525 Mariani Avenue, Cupertino, CA 95014; (800) 662-9238.


MacPak, PrintPak, and Macintosh Carrying Case.

Macintosh Books

Macintosh! Complete, by Doug Clapp, is a new book from Softalk Publishing that covers the basics of the Macintosh's system and its operation, *MacWrite* and *MacPaint*, and Microsoft's *Chart* and *Multiplan*. The book also previews MacBasic and discusses Macintosh Pascal and learning to program. The book's five appendixes cover type fonts, hardware specifications, ASCII control codes, standard key character formats, MacBasic, and the 68000 instruction set. 329 pages. $19.95. Softalk Book Division, Box 60, North Hollywood, CA 91603; (818) 980-5074.

The Apple Macintosh Book, by Cary Lu, explains how to use the Macintosh and gives an overview of the software available for the machine. The author also discusses how the Mac and its software work, the philosophy behind the machine, and external accessories. $17.50. Microsoft Press, Microsoft Corporation, 10070 Northup Way, Bellevue, WA 98004; (206) 828-8080.

Presenting the Mac, by Merl Miller and Mary Myers, describes the computer and its oper-

ation, the mouse, *MacPaint* and *MacWrite*, and discusses the basics of word processing. $5.95. dilithium Press, 8285 Nimbus, Suite 151, Beaverton, OR 97005; (800) 547-1842.

Introducing the Apple Macintosh, by Edward S. Connolly and Philip Lieberman, provides a look at Mac's peripherals and how they operate, the keyboard and the mouse, windows, *MacPaint*, and *MacWrite*. It also previews the Apple programs scheduled for release this spring, including *MacTerminal*. The book covers upcoming Macintosh Pascal and Logo programs and provides an introduction to Microsoft Basic and *Multiplan*. Four appendixes cover the 68000 microprocessor, the mouse, the disk drive, and how to care for the Macintosh. 189 pages. $12.95. Howard W. Sams, 4300 West Sixty-Second Street, Indianapolis, IN 46268; (317) 298-5400.

BPI Accounting Packages

BPI Systems has released Lisa 2 versions of three of their accounting programs: *BPI General Accounting*, *Accounts Receivable*, and *Accounts Payable*. All three programs are single-user, menu-driven, contain help screens, and allow the user to continue inputting data while the printer is working. Each module can create more than fourteen different reports. $595 per module. BPI Systems, 3423 Guadalupe, Austin, TX 78705; (512) 454-2801.

Apple Modems

Apple's 300-baud and 1200-baud modems connect to all Apple computers, including the Macintosh and Lisa, and are command-compatible with the Hayes Smartmodems. The new modems work with *MacTerminal* and *Lisa-Terminal* and provide built-in auto-dial and auto-answer functions. Both plug directly into the serial port of any Macintosh or Lisa and come with a manual and cable. The Apple Modem 1200 operates at 110, 300, and 1200 baud. The Apple Modem 300 works at 110 and 300 baud. Apple Modem 300, $225; Apple Modem 1200, $495. Apple Computer, 20525 Mariani Avenue, Cupertino, CA 95014; (800) 662-9238.

MacTerminal

MacTerminal is designed to be used with the Apple modems and incorporates the ability to cut and paste information into other personal productivity applications with a 9600-baud error-checking file transfer capability. The program also includes VT100, VT52, and TTY emulators and achieves a 3270 emulation when used with the AppleLine coaxial adapter unit. $99. Apple Computer, 20525 Mariani Avenue, Cupertino, CA 95014; (800) 662-9238.

Datasaver AC Power Backup

The Datasaver AC Power Backup insures data against power failures and brownouts by automatically switching on within 1/100th of a second. It includes a front-panel alert light, an alarm buzzer, and an internal battery with an automatic charger. External battery jacks are also included to allow extended running time or portability. The 90-watt model accommodates a Macintosh and the 200-watt model accommodates a Lisa. $395 and $695 respectively. Cuesta Systems, 3440 Roberto Court, San Luis Obispo, CA 93401; (805) 541-4160.

Tecmar Peripherals

Tecmar is releasing Fritter Modems, 300-baud and 1200-baud models that are 212A-compatible and have Touch-Tone decoding, a pulse tone automatic dialer, and full voice interface. Estimated price: 300-baud, $250; 1200-baud, $500. Tecmar Incorporated, 6225 Cochran Road, Solon (Cleveland), OH 44139; (216) 349-0600.

High-Resolution Printing Process

A new process from George Lithograph Company reproduces Macintosh images on paper with the same fine resolution that appears on-screen. Called Screens, the process electronically transmits images to a laser printer or to a hi-res CRT typesetter. The process eliminates distortion caused by the curvature of the video display screen. Screens can produce an entire page or file, as well as any portion of a page, even if the whole page is too big to be displayed on the video screen at one time. The process can scale images up or down electronically and even squash or stretch them from the bottom, top, or sides to create an Alice in Wonderland effect. The final product provides a resolution of 300 dots per inch from the laser printer or 700 dots per inch from the CRT typesetter. Prices are $6 for each laser file, $22 for each file printed by a typesetting machine, and $20 for each disk the printers are required to handle. George Lithograph Company, Graphics Division, 650 Second Street, San Francisco, CA 94107; (415) 397-2400.

Habadex

Haba Systems is introducing *Habadex*, a combination appointment calendar, tel- phone book, address book, and list and label preparer. *Habadex* keeps track of thousands of names and provides space to record additional information under each name. When a name is highlighted, *Habadex* dials that number with a click of the mouse. $195. Haba Systems, 15154 Stagg Street, Van Nuys, CA 91405; (818) 901-8828.

Microsoft Chart

The long-awaited *Chart* is a general business graphics package that integrates with *Multiplan* and offers the user a selection of more than forty charts. *Chart* allows a business professional to input information—such as numerical series and time series—directly from the keyboard or from external data sources like *Multiplan* or Microsoft's as-yet-unreleased *File*. The software presents each series of numbers in its own data window for on-screen entry, editing, and formatting. Any element in any of the more than forty available charts can be selected through the mouse and customized. $125. Microsoft, 10700 Northup Way, Bellevue, WA 98004; (206) 828-8080.

Personal Tax Planner

Personal Tax Planner enables Macintosh users to examine up to five alternatives for a single tax year or projections of up to five successive years. The program automatically calculates federal tax liability, capital losses, capital gain deductions, and taxable Social Security benefits for years 1984 and after. In addition, *Personal Tax Planner* automatically performs income averaging and calculates alternative minimum tax. $99. Aardvark/McGraw-Hill, 1020 North Broadway, Milwaukee, WI 53202; (414) 225-7500.

Please address announcements of new Macintosh and Lisa products and services to MarketWatch, Box 7041, North Hollywood, CA 91605.

By CORDELL COOPER

Fingertip Art for Lisa

Mention the words "art department" to someone who's worked in an ad agency or on a magazine and he'll probably conjure up images of freewheeling manic-depressives who're just a tad more conceptual than they oughta be. Mention the same words to the folks at BPS Inc. and they'll talk to you at length about a hat, a couple of cows, the shrinking dollar—just a few of the more than three hundred images in the company's new software package for the Lisa and the Lisa 2 series.

Designed as computerized clip art, *Art Department* is an adjunct to the *LisaDraw* graphics program and is geared to small businesses that generate *LisaDraw*-enhanced presentations. The product becomes an integral part of *LisaDraw*, taking advantage of *LisaDraw's* ability to alter the shading of a graphic, duplicate an image or groups of images, isolate portions of a graphic, and easily size illustrations.

The software's graphics are broken down into ten general categories, each divided into subcategories. Among the more interesting categories:

Graphic Elements consists of Accents (an odd assortment, including things like a wrought-iron design, a sign, stars, curlicues, a question mark, bull's eyes, and so on); Arrows & Pointers (semicircular, striped, solid; includes a bow with three arrows and a pointing hand); Borders (five patterns); Brackets (including cupped hands and bookends); Dashed Lines (five patterns); and Dashed Shapes (squares, ovals, diamonds, arcs, and circles).

People, Places & Things has four subcategories: Common Objects (a weird grab bag of images ranging from a derby, an apple, a flag, and a coathanger to a sofa, two rings, a paintbrush, and a light bulb); Measures (a clock, stopwatch, ruler, hourglass, and thermometer); People (an unfortunate reminder that sexism thrives in the computer age: a businesswoman and businessman—nicknamed Lois and Clark—he with a briefcase, she with a folder; a male executive behind a large desk; a generic human figure, again male; also included are gender symbols and a family graphic consisting of a mother, father, and two children); finally, Places (a "Main Street" graphic consisting of two storefronts, a sidewalk, fire hydrant, telephone pole, and parking meter; a barn and fence; a two-lane highway, lake, and mountain range; a small urban skyline; and three tract houses side by side).

Media is broken down into Communications (frames of film, an open book representing documentation, a letter and envelope, a phone, a graphic depicting a handshake, a podium, a round table and chairs representing a panel discussion, a flip chart, and an overhead projector); and Mass Media (television monitor, radio, newspaper, billboard, and magazine).

Office contains Equipment (a Lisa computer, a copy machine, a typewriter/printer, a screen, and a telephone); Furniture (a file cabinet, chair, desk, bookcase, and wastebasket); and Supplies (5 1/4-inch disk, 3 1/2-inch disk, stapler, tape dispenser, note pad, scissors, and so on).

Other categories include Business Forms (with a calendar invoice/packing slip, purchase order, and statement), Graph Paper, Maps & Flags, Transportation, Type Styles, and Work & Wealth. There's no shortage of images here, but whether you'd have a frequent need for many of them is questionable. For instance, how often would you use a wrought-iron design, onion skin shells, bullets (not dots—we're talkin' bullets), or a derby? A larger selection of more common graphics would have been preferable. Also, there's some unnecessary duplication: A cow appears in two subcategories—under Road Signs and Industry. If you're preparing a commodities report on pork bellies, you're out of luck.

The software, however, integrates extremely well with *LisaDraw*; and if BPS made available additional versions tailored to particular businesses or industries, *Art Department* would be an extremely valuable tool.

LisaArt

To illustrate how the software works with the graphics program, we'll do some simple *LisaDraw* maneuvers. We'll design a cover for a report on grain futures, utilizing an image from one of *Art Department's* folders and adding a few simple touches. To retrieve our principal graphics, stalks of corn and wheat, we'll open the Work & Wealth folder by quickly clicking the mouse button twice. We'll then position the cursor on the pad labeled Industry and again double-click the mouse quickly. We'll title our document Stalk Naked and open it up.

To isolate the corn and wheat from the other images, we'll pull down the Edit menu and choose Select All of Document. We'll remove the corn and wheat by depressing the shift key, moving the arrow onto the images, and clicking the mouse button once. From the Edit menu we'll then choose Clear, and then drag the graphics to the middle of the screen (figure 1). You can experiment with shadings at this point by pulling down the Shades menu and trying some of the selections.

We now want to duplicate both of the images. To do this we'll select both of them, depress the Apple key, and press D once for each duplication (figure 2). To add some

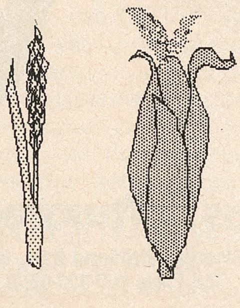


Figure 1.

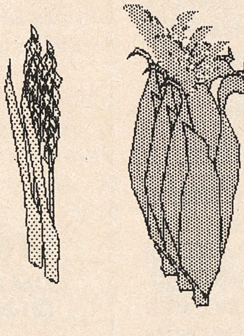


Figure 2.

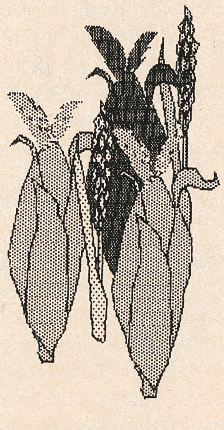
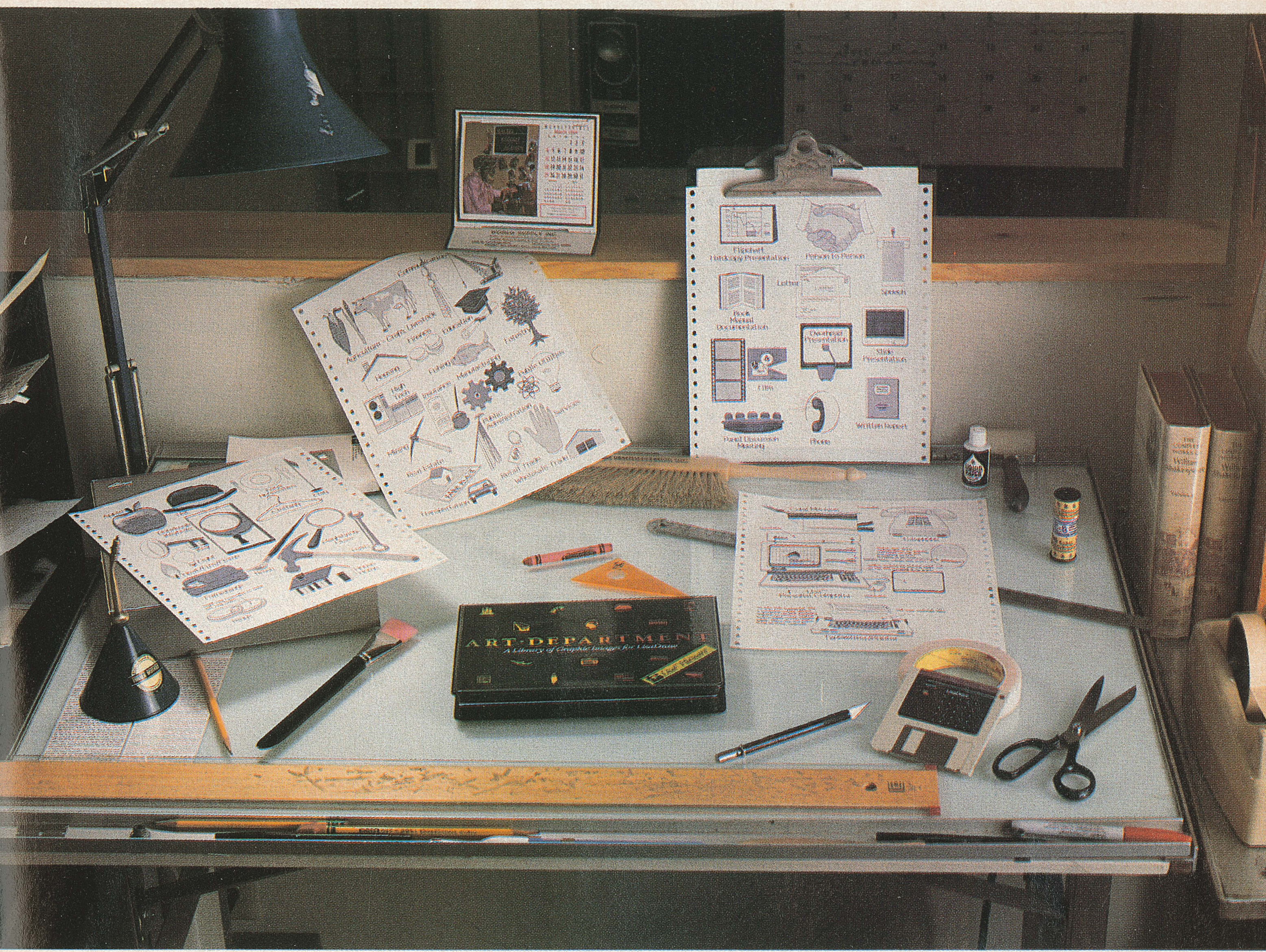


Figure 3.



dimension we'll pull down the Shades menu, darken one of the corn stalks, and then move each of the five graphics individually, creating a sort of three-dimensional grain bouquet (figure 3). To box the image we'll place the arrow on the palette's box symbol, click the mouse, and then draw the box. You can size the box by eye or work with precise dimensions.

Now we'll bring the image to the front by clicking the box and choosing Send to Back from the Arrangement menu. Next, we'll position the graphic in the upper two-thirds of the box. Then we'll accent the cover using the Lines menu and selecting the second thickest line. Click anywhere outside the box to deselect it.

To add a title, we'll first move the arrow onto the palette's text symbol and click the mouse. Next we'll move the text pointer directly under the graphic, click the mouse button, type "Grain Futures for First two quarters of 1984," and activate the palette's change symbol.

To select a typeface we'll pull down the Type Style menu, select Bold, and then choose PS one-third-inch Classic and PS Modern. Moving to a blank spot on the screen and clicking the mouse will deselect the text.

Now for a little fine-tuning. First we'll vertically balance the graphic and title within the frame. Moving the arrow to the center of the image and clicking the mouse will place a selection box around the image; we'll now pull down the Arrangement menu and select Align Centers.

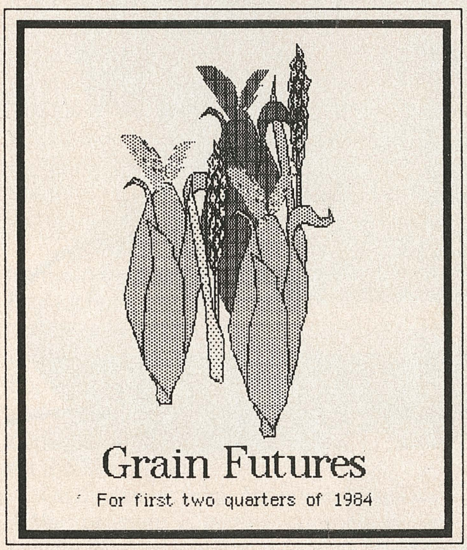


Figure 4.

Move the arrow to a blank spot, click the mouse, and we're done. Figure 4 shows the final result.

The Lisa 2 version of *Art Department* comes on two 3 1/2-inch microdisks, a package virtually identical to the 5 1/4-inch disk version for the original Lisa.

The documentation is thorough and clearly written, and it includes a visual directory of illustrations contained in each folder, as well as a tutorial that explains how *Art Department* integrates with *LisaDraw*. A word index is also included.

For a small business that doesn't have a covey of crazed artists at its beck and call, there are enough usable images here to make the software worth its price and more.

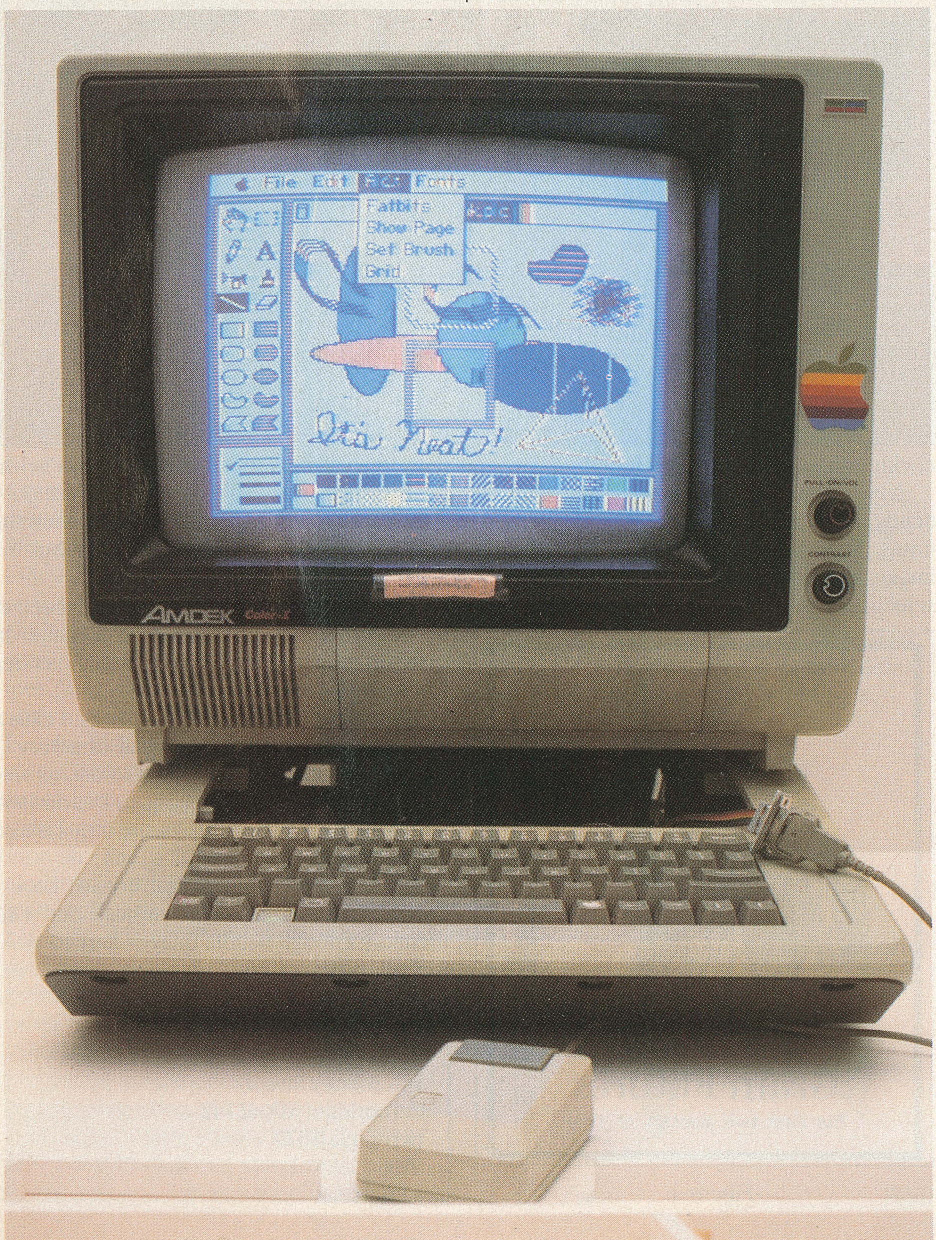
Art Department
Business and Professional Software
143 Binney Street
Cambridge, MA 02142
(617) 491-3377
$195

MISCELLANEA

A Mouse for the Rest of Them

No one knows how it started. Rumor has it that a Mac mouse broke into the breeding stock of Lisa mice at Apple late one night. Several mouse-months later Apple had a baby boom on its hands. This may or may not be true, but one thing is certain: Apple's old standby, the Apple II, now sports a familiar little long-tailed rodent as an optional accessory. The floodgates are open to Mac-alike software, and Bill Budge, under the auspices of none other than Apple Inc., is leading the way.

Budge's program, which is packaged with the AppleMouse II at $175, is called *MousePaint*. You get three guesses what it does, and the first two don't count. Budge has put his graphics expertise, previously exhibited in the ground-breaking *Raster Blaster* and *Pinball Construction Set* packages, to the task of creating a reasonable facsimile of *MacPaint*. In truth, he came a lot closer than you would think possible on the modest eight-bit Apple II.



Budge's program captures the look and the methodology of *MacPaint* (one observer here wondered how we had hooked a Macintosh up to a color monitor), although some of the features have, understandably, been omitted. For instance, while *MousePaint* has a selection rectangle that you can use to cut, copy, paste, delete, and move rectangular objects, you can't stretch them. Nor does *MousePaint* have a lasso. It has all the solid and outlined shapes, and it rubber-bands them the same way *MacPaint* does (and almost as fast), but it doesn't have a paint bucket to fill an existing area.

The program emulates the Macintosh in its use of overlapping windows and pull-down menus. Budge is working on a toolkit of routines to give other programmers the resources to make their own programs Mac-like. This all seems to stem from a directive from Apple president John Sculley, who said early in his Apple tenure (which began less than a year ago) that the look of Lisa Technology would be the hallmark of Apple software throughout the entire line of computers before long.

Mac Won't Count to 1-2-3

Lotus Development Corporation will not release *1-2-3* for the Macintosh, said Lotus's public relations representative Mel Webster of Miller Communications. The company will, however, release a program with many of *1-2-3*'s functions late this year. Webster revealed that the as-yet-unnamed program will be more like Lotus's *Symphony* than *1-2-3*. *Symphony* is a combined spreadsheet, database, word processor, telecommunications program, and graphics package. *1-2-3* only combines graphics, a spreadsheet, and a database. The Mac program will also have some extra features not found in *1-2-3* or *Symphony*. Miller Communications had originally announced that Lotus would be releasing *1-2-3* for the Macintosh this spring. The press release error was caused by a misunderstanding between Lotus and Miller Communications, Webster said.

Mac Gets a Piece of the Pi

Washington, D.C., area Macintosh owners can find support, get discounts, and

receive firsthand information from computer experts by joining a new Macintosh special-interest group formed by the Washington Apple Pi user group.

Washington Apple Pi, one of the largest computer hobbyist groups in the country, has about four thousand members. At each monthly meeting, members conduct a question-and-answer session, and then the club holds a presentation or panel discussion on topics such as new products or word processing. After each main meeting, members break up into special-interest groups.

All Washington Apple Pi members receive a monthly sixty-four-page newsletter and are welcome at any of the club's tutorial sessions. In the next few months the Mac group will be starting tutorials on using Mac software, said club member Kevin Mealon. Other membership benefits include access to the club's libraries of computer magazines, books, and commercial software. Members may also receive discounts from dealers when they make purchases with other Washington Apple Pi members. The club's hotline is staffed by more than seventy-five qualified volunteers and is open from 5 p.m. to 10 p.m. to handle members' questions on specific programs, peripherals, and programming languages.

The club invites guests to speak at meetings. At the January 28 meeting, Steve Wozniak, Burrell Smith, and Bill Atkinson introduced the Mac to a crowd of twenty-five hundred.

Membership in Washington Apple Pi costs $7 to join and $18 a year in membership dues. For more information, contact Washington Apple Pi, 8227 Woodmont Avenue, Suite 201, Bethesda, MD 20814; (301) 654-8060.

Real Deals

Apple wants the Macintosh to fly, and they're doing their best to attract to the new machine the people who can promote the Macintosh market. That means more than just paying top dollar for advertising on the Super Bowl; it means getting the machine into the hands of the people who will build it into an industry. Early efforts began with a seeding of Macs to developers in advance of the machine's introduction and continue with special deals for Apple salespeople. The most recent, and perhaps most unusual, move has been to offer the Macintosh to book authors at a substantial discount.

On the day before the Macintosh's official introduction, a letter was sent to selected writers who had expressed interest in the machine. In the letter, Apple offered the Mac in several configurations—with or without *MacPaint*, *MacWrite*, and the Imagewriter—at considerable discounts, although not as considerable as those discounts offered to universities, developers, and salespeople. The offer, which expired on March 1, required authors to submit an outline or proposal for a book project and a letter of confirmation from a recognized publisher in order to be considered eligible.

It is unknown how many letters were sent or how many authors responded, but we can hope to see the fruits of the program by the end of the year in the form of quality user, consumer, and technically oriented books on the Macintosh.

On the dealer front, Apple's enticing Own-A-Mac program is getting salespeople personally involved with the machines they sell. As Apple explains in its dealer literature, "We know that once you use a Macintosh, you'll be its biggest fan."

Full-time salespeople who have been employed at least sixty days at an authorized Apple dealership may buy Macs with Imagewriters for just under $1,000—with *Mac Write*, *MacPaint*, and *Multiplan* thrown in as a bonus.

If you're thinking about racing down to your local Apple dealer to sign up for sales work, be aware that the Own-A-Mac program carries a few restrictions: Salespeople must

Who's Buying Mac?

Apple has predicted that 65 percent of Macintosh buyers will be businesspeople, also known as knowledge workers. What is a knowledge worker? Apple has defined this group as people who sit at desks, spend 46 percent of their time in meetings with clients and co-workers, 16 percent of their time reading and analyzing, 13 percent creating documents, and 25 percent doing "less productive" work. Knowledge workers solve problems; write memos, papers, and proposals; and make presentations. One Apple representative said only half tongue-in-cheek that knowledge workers usually have business cards and telephone extensions.

It is to these knowledge workers that Apple is aiming its lavish advertising and public relations campaign. Is the marketing approach, so crucial to a new product, on target? Who are the people buying the computer? What do they plan to use the machine for?

ST.Mac conducted an informal poll of forty randomly selected Apple dealers to find out. The results seem to back up Apple's predictions—but not perfectly.

Everybody is buying Macs—students, farmers, engineers, people who were excited about the Lisa but didn't like the price, lawyers, professors, doctors, home users, and businesspeople. However, the two predominant groups were businesspeople/professionals and home users, with businesspeople outnumbering home users at a ratio of approximately 5 to 4. Noticeably missing from the ranks of the buyers were hackers and people who already own another Apple computer. Retailers say these prospects look with interest, but don't buy.

Mac buyers are also a mixture of experienced users and raw beginners, with knowledgeable users outnumbering beginners. The majority of the experienced computer users gained their experience from computer use at work and had not owned a machine before. Those who had owned a computer before mostly owned "lower level" systems they had outgrown, or owned computers they deemed "unfriendly."

Even more varied than the kinds of people who bought Mac were the applications they bought Mac for. Of course, businesspeople planned to do word processing, accounting, and spreadsheet watching, and home users planned to use the machine for home education, word processing, and drawing. However, some folks had more offbeat applications in mind.

A South American zipper designer planned to bring back two Macintoshes to his south-of-the-border factory. A landscaper purchased a Mac to help draw lawn plans that would help clients visualize their shrubs. An energy management company was using Mac to help monitor the efficiency of energy devices. Another buyer planned to use *MacPaint* to plan weaving designs. A doctor was using his machine to draw bone cross sections for a journal article, and a farmer chose Mac for planning crop and land layouts. Techies may not be buying, but many others are thinking of unique ways to use the computer.

Users may be taken in by Apple's advertising blitz, but what about the people who really know computers—the computer salespeople? Mostly they raved about Mac. "A lot of us have seen computers for years, but the first one I'd plunk down money for is the Macintosh," said Steve Holle of Computer City in San Diego. Mark Seay of Love Computers in Glendale, California, called the Macintosh "a lovely machine to use." And Larry Cohen of the Logical Choice in Baltimore called Mac "a charismatic computer."

Although the Mac seemed unanimously popular and many businesspeople were buying it, others were deciding to wait because of the present lack of software. "People with more sophisticated needs will wait," Cohen said. Other salespeople said businesses were interested, but hesitant about Mac. "Business users are worried about the lack of a second disk drive, the limited memory, and the present lack of software," said Mark Davison at Infomax in Walnut Creek, California. As Steve Holle in San Diego put it, "No one ever got fired for buying an IBM."

The verdict on how popular Mac will be and who will be its major purchasers isn't in yet; it's too early to tell whether Apple's assessment of the Macintosh market is on target. From first indications, buyers are enthusiastic but wary. Mark Seay may have summed it all up when he said, "Mac will sort itself out in the marketplace as things get going." The results of the sorting may, however, yield some surprises.

have also completed Apple's one-day Macintosh Sales Workshop and may not resell their machines for a minimum of one year. Also, machines will be delivered to salespeople on a first-come, first-serve basis, and with Apple's factory just gearing up for full shifts, many salespeople have been advised of a several-month wait for machines.

Mac Extravaganza

Just a few days after Apple's shareholders were treated to a peek at the new machine at the annual meeting January 24, the Macintosh was publicly debuted in Boston. It has become a tradition for new Apple machines to be presented before a gathering of the Boston Computer Society. Both the Apple IIe and the Lisa were first shown to this group, which is one of the largest user groups in the country with more than eight thousand members. However, if this sophisticated group was expecting the usual staid corporate presentation, they were greatly surprised!

Steve Jobs arrived in Boston with eight members of the original Macintosh design team. All afternoon and evening, Apple provided demonstrations for large groups of BCS members. Then some two thousand people filled Hancock Hall to hear Jobs present the machine. These were the lucky ones who had stood in line for several hours in freezing weather. An estimated eight hundred people were turned away in disappointment.

The presentation began with a lavish new Apple video called "Leading the Way," done to the tune of "Flashdance." People were actually dancing in the aisles singing, "We Are Apple!" to the music blasting from the twenty-four large speakers surrounding the hall. The scene resembled an electronic-age revival meeting. The crowd went wild when the Macintosh introduced Steve Jobs, who gave an hour-long multimedia presentation using two giant-screen projectors. One screen showed a thirty-foot-high live image of Jobs, an apt analogy to the famous "1984" Macintosh commercial. The total effect was breathtaking and inspiring.

After the presentation, Jobs invited the eight members of the development team onstage for a lengthy question-and-answer session with the audience. The team received a thunderous applause for their work on the Mac. Steve Wozniak, who flew in unexpectedly from Seattle, also got a prolonged ovation when introduced.

It was rumored that Apple spent over $40,000 on the Boston debut. Whatever the cost, everyone who attended that night came away infected with a vision of the future.

More Disk, More RAM

High on the Mac wish list are more memory and double-sided drives. Switching to double-sided drives would boost Mac's disk storage from 400 to 800K per drive. Substituting 256K RAMs for Mac's 64K RAMs would produce a 512K machine—enough memory for all but the most die-hard RAM buffs.

So what's the holdup? Those who know point the finger at Sony and at the chip manufacturers. It seems that Sony isn't yet able to produce double-sided drives in the quantity required by Apple's sales projections. Same for 256K RAM chips. The big chip makers are only now beginning to make the high-capacity RAMs in limited quantities (the complexity of the chips reduces the manufacturer's yield per run). The chips are also expensive—for now, anyway—with retail prices now averaging $60 to $90 *per chip* (and each Mac will need sixteen chips).

How many 256K RAMs will Apple need? Given Apple's expectation of selling one million Macs in the next sixteen months, the numbers look like this: 1,000,000 Macs times sixteen chips per machine equals 16,000,000 chips!

Still, Apple employees speculate that 512K machines will be available before the end of the year. Now the speculations should begin about Apple's upgrade policy on 128K machines....

Unworkable Workspace?

Microsoft Basic for Macintosh has only been available for a few weeks but is already receiving hoots from users. It seems that RAM workspace for Basic programs is skimpy: only 13,405 bytes. The workspace can be enlarged (to 24,706 bytes or 28,706 bytes) by clearing additional memory, but this results in rendering the Mac desk accessories unusable or cutting into Mac's memory stack.

More disgruntlement is voiced over Microsoft's implementation of windows. There's one window for the program display, one or more windows for one or more program listings, and a command window for entering program lines. But can't the program line be entered directly into the listing window? Nope. Why? Nobody (except Microsoft) knows. Evidently, Microsoft thinks the window arrangement is just fine, or they would have done it differently.

Another possibility is that Microsoft rushed a "quickie" version of Basic onto the market and plans to follow up with a more sophisticated product.

Jobs's Progress

Things aren't always rosy just because you're worth $100 million and are chairman of the board of a Fortune 500 company.

An often-repeated story recounts that Steve Jobs was denied the chance to oversee the Lisa project. Rebuffed, Jobs instead directed development of Macintosh, a project that was derisively termed "Steve's back-to-the-garage fantasy." There was even grumbling, for a time, that Apple would be better served by Jobs's departure.

With the success of Macintosh, Jobs's star is again rising within Apple. The Lisa and Mac divisions were recently merged into a

"thirty-two-bit division." Who will head the new, expanded arm of Apple? You guessed it: Steve Jobs.

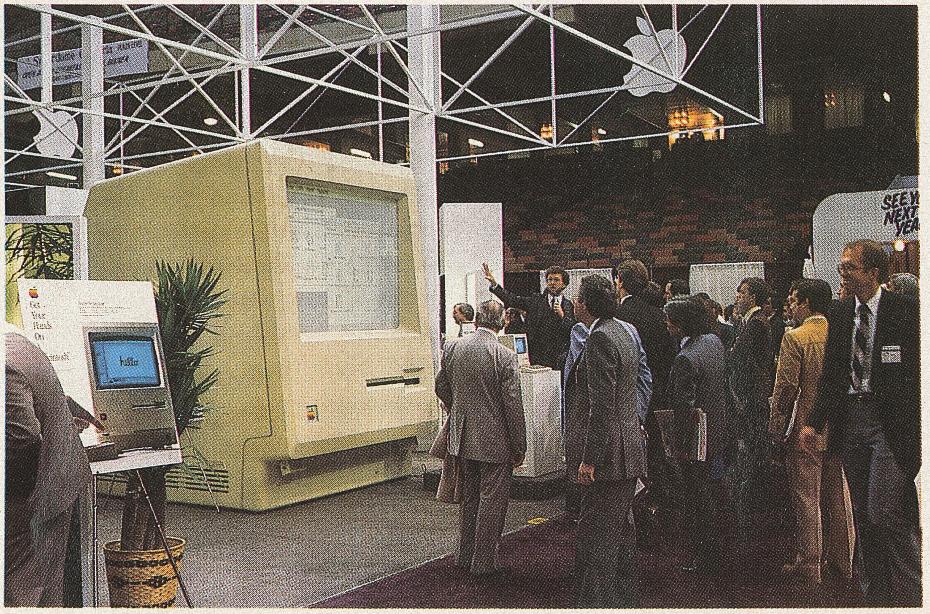
Success, it seems, is the best revenge.

Big Mac Attack

The Macintosh is a compact, easily transportable piece of equipment, right? Well, we found one that would prove to be a problem if you tried to slip it under an airplane seat.

At Softcon, a software industry trade show held during February in New Orleans, Apple unveiled a large, economy-sized Macintosh. Measuring ten feet in height, the machine seemed like the perfect desktop addition for the Jolly Green Giant. Speculation abounded concerning the accessories for this new model. For example, someone determined that the mouse for it would probably seat two, ride smoothly, and turn on a dime, but that long trips were probably out of the question. On the other hand, with the storage capacity of the disk measured in gigabytes (billions and billions of characters), you wouldn't see many "running out of space" messages. Of course, we're talking about a microdisk with the dimensions of a desktop. Nobody even wanted to think about the keyboard.

Actually, this Macintosh was built in just two weeks by the Eikan Group, located in Campbell, California. A spokesperson for the firm said that Apple's display was made of lumber and broken down into six pieces for transportation purposes. The displays were provided by a video projector hooked up to a smaller, electronic Macintosh that the demonstrator used in front of the display. By the way, Eikan is pronounced "icon."



Steve Shendelman

Apple lifted a tarpaulin of secrecy at Softcon to give visitors a first look at the long-awaited Big Mac.

Unusual Accessories

Macintosh desk accessories appear in their own special windows on the Mac screen, right? Maybe not. Here are some interesting excerpts from Mac documentation now available to software developers:

"A desk accessory may have its own menu. A desk accessory can even have an entire menu bar full of its own menus; its menus will completely replace the menus already in the menu bar.

"Although desk accessories are usually displayed in windows, this is not necessarily so. It's possible for an accessory to have only a menu (or menus) and not a window. In this case the menu will include an item to close the accessory."

Okay. How about a *MacWrite* menu bar title that reads: Speller? Or Thesaurus? Or....

MacWrite Rumors

Speaking of *MacWrite*, it's rumored that a more extensive version of the unique Mac word processor is now being developed. The new version, according to our sources, will offer superscripts, subscripts, footnote capabilities, and column moves. Also, the new version will be disk-based and limit document length only by space remaining on disk, which will allow creation of massive documents.

Famous T-Shirts of the Past

Prior to Mac's introduction, residents of Cupertino were teased by T-shirts. The T-shirts, prominently displayed by members of the Mac group, were emblazoned on the front with the word *Macintosh*. The back of the T-shirt read: "Apple will not comment on unannounced products."

The T-shirts, it need not be said, are now collector's items.

Where's the COM Statement?

Astute users of Microsoft's Macintosh Basic will notice the omission of a COM statement. In other versions of MBasic, COM opens a serial port and sets communications parameters such as baud rate, parity, and number of data bits.

But COM is absent in Microsoft's version of Basic for Macintosh, which means that users with modems can't create even the simplest of Basic telecommunications programs.

Since *MacTerminal* wasn't released as this issue went to press, and a Macintosh assembler is still in the offing, those with an itch to dial the world will just have to loop a bit longer.

...and the SOUND Statement?

Another disappointment in Microsoft Basic is the absence of a SOUND or PLAY statement. Both keywords are found in MS-DOS versions of Basic that are tailored for machines (like the IBM Personal Computer) that allow only one tone at a time. Despite Mac's capability of four-voice simultaneous sounds, Microsoft Macintosh Basic users have only one word at their command: BEEP. No SOUND, no PLAY, just BEEP.

Big Files, Bigger Volumes

Mac's operating system seems to be designed with mass storage in mind. The operating system supports individual file sizes of up to one megabyte and volume sizes of up to thirty-two megabytes.

Volumes represent individual drives. Mac's internal drive is volume 1; the soon-to-be-released external drive is monikered (surprise!) volume 2 by the operating system.

Hard disks up to thirty-two megabytes can be configured to appear to Macintosh as one drive (volume). Users waiting for seventy-megabyte (and larger) drives needn't worry: The drives can (in theory, anyway) be apportioned into one or more thirty-two-megabyte (or smaller) volumes.

One Million and One, One Million and...

How long will a Mac disk last? Hewlett-Packard, which also uses Sony 3 1/2-inch disk drives, says disk life is two million revolutions. The HP-150 computer, in fact, warns users to back up their disks after 1.5 million disk revolutions.

Macintosh doesn't provide an indication of disk revolutions (other manufacturers don't either, with the exception of HP).

If the above comments make you nervous, relax. A little math shows that it takes 83.33 hours of nonstop spinning (assuming a disk speed of 400 rpm) for a Macintosh disk to log two million revolutions.

Also, Mac software is capable of repairing damaged disks, which further ensures the long life span of the Apple hard-shell, nonfloppy floppies.

Creating "1984"

If you watched the Super Bowl on Sunday, January 22, you probably saw what's known in the advertising business as a "teaser" for Apple's Macintosh. In the commercial, a group of gray, shaven drones sit transfixed in front of a giant monitor screen, on which looms a maniacal, mesmerizing Big Brother figure. Then, seemingly from nowhere, a colorfully dressed young woman sprints onto the scene wielding a sledgehammer, which she hurls at the screen, destroying it and ending the ominous transmission. Then the words appear: "On January 24, Apple Computer will introduce Macintosh. And you'll see why 1984 won't be like '1984.'"

The idea for this striking sixty-second sendup of George Orwell's vision of the future came from three men at Chiat/Day Advertising.

Several years ago writer and creative director Steve Hayden presented the concept, originally intended to run as a print ad in *The Wall Street Journal*, but it was nixed by higher-ups. Two collaborators on the Apple account, Lee Clow and Brent Thomas, resurrected it in late 1983 while brainstorming ideas for the television spot. This time the idea was accepted.

Ridley Scott, a veteran British commercial director who has recently distinguished himself in America with such successful feature films as *The Duelist*, *Alien*, and *Blade Runner*, was chosen to direct. The commercial, in fact, was conceived with Scott in mind from the start. Shot in three days at Shepperton Studios outside London and edited in a day, the finished product would run all of sixty seconds and end up costing around $400,000.

"We needed something to get the attention of America, a tease," says Thomas. "It's a lavish arrangement and most advertisers don't have the money to do that. But there was so much riding on this one that we felt it necessary to go a little overboard and first do a tease that sort of hit America on the head with a two-by-four. We're now following it up in subsequent advertising with the answer to that tease, telling people exactly what Macintosh is in a very straightforward, honest, and up-front way."

The distinctive visual look of the ad was due in part to a conscious avoidance of using computer-generated special effects. Instead, a few old Hollywood tricks, such as glass painting and matte printing, were used. To effect an unearthly pallor, monochrome make-up was used on the two hundred working class skinheads recruited from fringe London to portray their fictional counterparts. Though shot in color, the deadening impression made by the lighting and make-up initially leads viewers to believe the ad is in black and white. This illusion serves to heighten the contrast when the hammer-bearing woman appears very much alive with color.

Finding an actress for that role with just the right mix of athleticism and beauty proved difficult. After fruitless casting sessions in London's Hyde Park with dozens of women from modeling agencies throwing hammers around, the part of the runner was finally filled by scouring the local London health clubs.

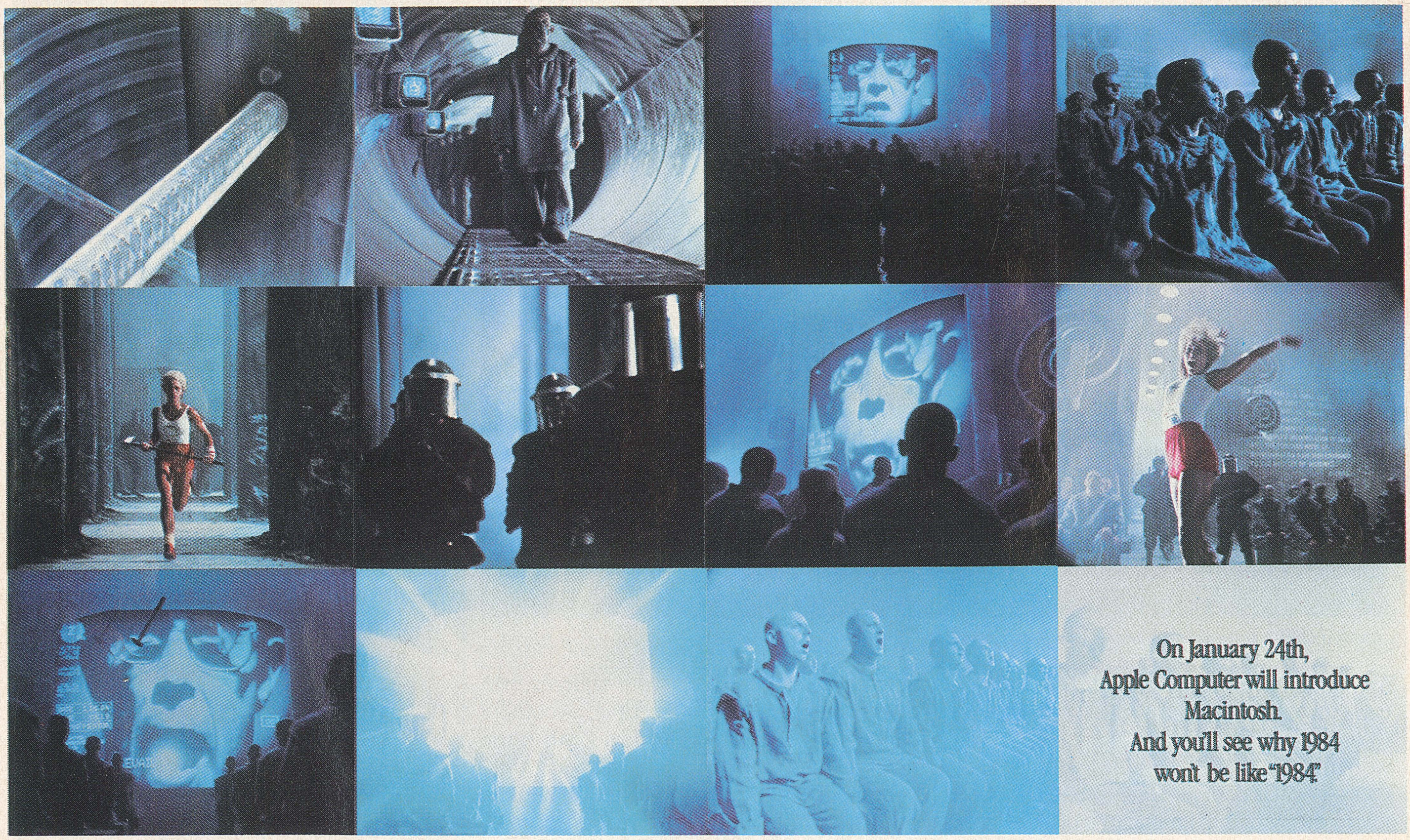
Not once did a computer appear in the production, although an Apple II was used to generate the spurious data that appeared on the monitor screen superimposed over Big Brother's face.

"There was resistance to the commercial and Apple hemmed and hawed a bit, but finally, sort of by default, it was aired," Thomas says.

"There are still people at Apple who regard the piece as immature despite its success, claiming it was an indulgence. The commercial is polarizing.

"The suggested allusion to IBM was serendipity. I chose the blue tones for the background when color-correcting it because they contrasted very nicely against the woman's skin. Industry insiders might have decided to read that as subtext referring to Big Blue, but that wasn't the intent," Thomas says.

Since its one and only airing on national network television, the Macintosh commercial has assumed all the earmarks of a classic, having received coverage from scores of newspapers and local television stations all over the country. The next opportunity you'll probably get to see it will be on one of those programs featuring a history of television's greatest moments in advertising.



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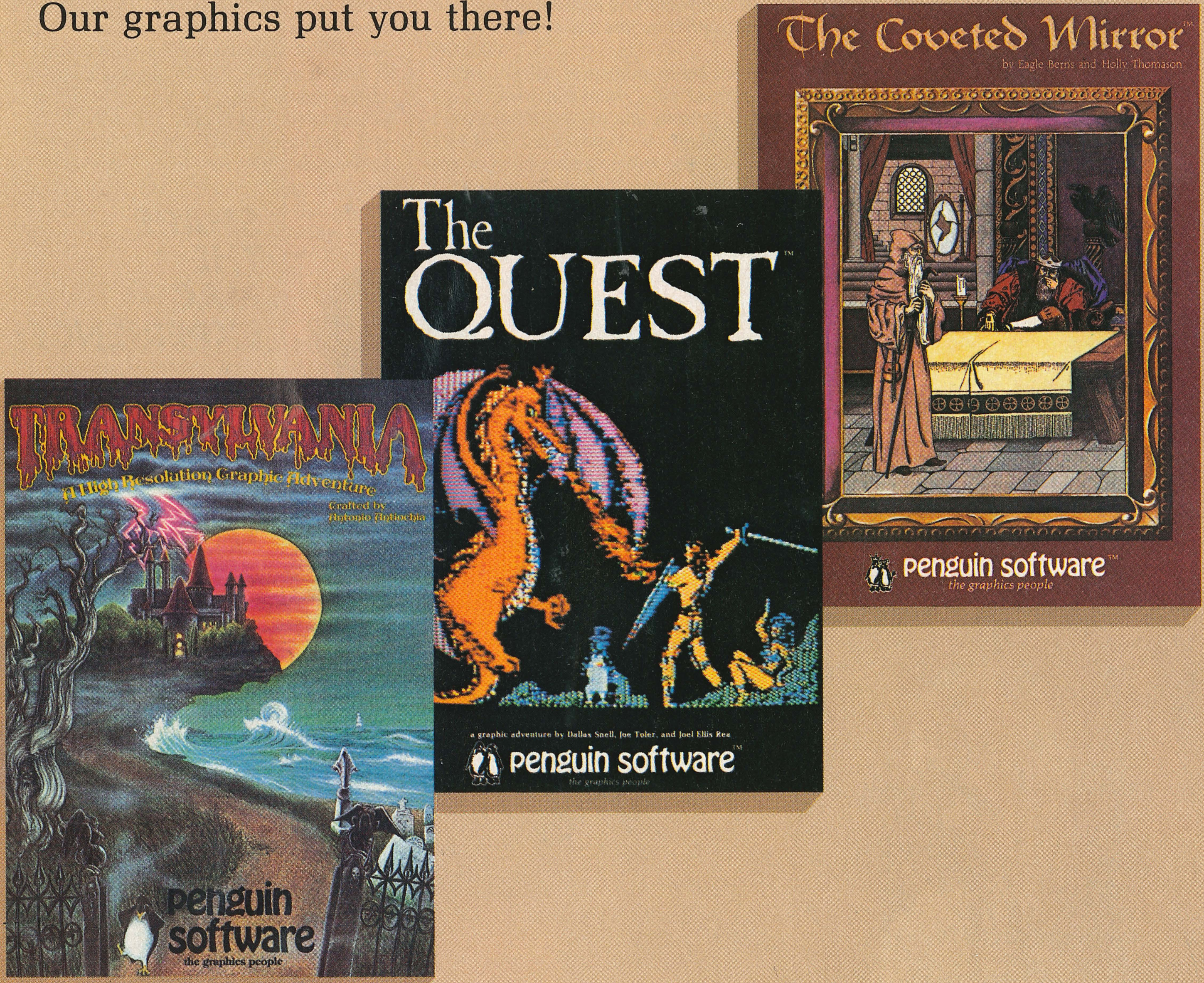

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The Penguin adventures are or will be available on disk for the Apple II series, Atari home computers, Commodore 64, IBM PC, and Apple Macintosh. And since they're from Penguin, price in 5¼″ disk format is only $19.95 each. Other formats may be higher. Graphics created with The Graphics Magician.

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